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SIX ESSAYS
ON
THE PLATONIC THEORY OF
KNOWLEDGE

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SIX ESSAYS

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ON

THE PLATONIC THEORY OF
KNOWLEDGE

as expounded in the later dialogues and
reviewed by Aristotle

by

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late Marion Kennedy Student of Newnham College

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PREFACE

THE following essays, written during my tenure of a studentship at Newnham College, Cambridge, were the outcome of a genuine interest in the Platonic controversy, and of a desire to satisfy myself, by independent study, regarding the doctrines that the later dialogues seem to teach. In a subject that has for so long been the source of disagreements one can scarcely hope to produce a work that will commend itself to every critic, or to bridge in any degree the chasm that already yawns between the two leading schools of interpretation; and I must own frankly, at once, that I belong to the school that sees in the later work of Plato a fuller development and elaboration of the ideal scheme which was at first but vaguely sketched. It is not the spirit of controversy, however, but the hope for a better understanding of this position on the part of other controversialists, that has led me to publish these papers. In preparing them I have not neglected to make myself acquainted with the position taken by other schools; but that I am chiefly indebted to the Platonic scholars of Cambridge cannot be denied.

A word perhaps should be said in regard to the order in which the Platonic dialogues are here taken. I have assumed throughout—and I believe there is now almost general agreement on this point—that the six dialogues with which I chiefly deal, viz., the *Parmenides*, *Theaetetus*, *Sophist*, *Politicus*, *Philebus* and *Timaeus*, are posterior to the *Republic* and the *Phaedo*, and that, whatever be the order in which they are to be ranked, they belong, roughly speaking, to the same period of Plato's thought. The special order in which they are grouped here was particularly suited to the form of my essays, being based mainly on affinity in subject-matter; and any re-arrangement of the first four would not materially affect any of the conclusions I have reached. The *Philebus* and the *Timaeus*, however, I cannot help regarding for many reasons as posterior to the other four, and I believe that this, too, will be conceded by the majority of scholars. For my own part, I would go further and make the *Timaeus* the latest of them all, though I do not think that this particular article of faith is absolutely essential for the acceptance of the results of my essays. The *Philebus* and the *Timaeus* have so much in common that they must have belonged to practically the same period of Plato's life; and the obscurity of the former might plausibly be assigned either to the initial vagueness of a fresh development in Plato's philosophy, or to the contraction due to recapitulation.

I have derived the greatest benefit from Professor Jackson's articles in the "Journal of Philology", and from Mr Archer-Hind's edition of the *Timaeus*. I have read, too, with great interest various articles by Professor Shorey in the "American Journal of Philology", and others by Mr A. E. Taylor in "Mind". I have profited also from Carlill's lately-published edition of the *Theaetetus* and *Philebus*.

My grateful thanks are due to Mr R. D. Archer-Hind for much kind help and criticism, and also to Dr Budge of the British Museum for various suggestions regarding the subject-matter of Essay V. I must also acknowledge my obligations to Miss Alice Gardner, of Newnham College, and Miss M. E. Thomson, of King's College, Aberdeen, for their help at the proof-correcting stage. Finally, I must thank the officials of the University Press for their courteous assistance in the details of publication.

M. V. W.

ISLEWORTH,

January 21st, 1908.

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ESSAY I.

THE SEARCH FOR KNOWLEDGE.

THE desire for knowledge, so Aristotle¹ tells us, is implanted by nature in all men, but the intensity of the desire varies in different ages, and in different types of men, and in the same men at different stages of their lives. Plato, we know, found in it a motive power that never ceased, throughout a long life, to urge him on to intellectual labour and achievement, but even in his history one may detect times of crisis, in which the fervour of a glorious hope, or a dogged pertinacity in research, shows that he is grappling with the problem in its vastness.

It is in the *Phaedo* and the *Republic*, first of all, that he makes a systematic attempt to formulate a scheme of knowledge. In the former, disappointed by his study of Anaxagoras, he determines to make use of the indirect method of *λόγοι*, if thereby he may attain to metaphysical verity. In the latter his scheme is complete, his plans are laid, and already he beholds in anticipation the *ἰδέα τᾶγαθοῦ*, which is exalted above both knowledge and being, and is the goal of every

¹ *Met.* A. i. 1.

human effort. The last chapters of Book VI reveal the philosopher's aspiration visualised and glorified, and we cannot doubt that he has actual and definite hope of attaining to the truth he is pursuing along the lines which he there indicates. Yet the dialectical method of the *Republic* is not of a kind to satisfy either pupils or master; it is obscured by excess of light: the flights of imagination have reached a height to which sober intellect cannot climb. It is imperative, therefore, that the process of ascent from the assumption of εἶδη to the attainment of the ἀρχὴ ἀνυπόθετος should be described in language of scientific precision, and a still μακροτέρα περίοδος must be undertaken before knowledge is attainable. It is with some of the sign-posts that mark off this more circuitous route that the present papers propose to deal.

It would be as well to have in mind at the outset the leading features of the metaphysical and dialectical scheme of the *Republic*, and of its complementary dialogue, the *Phaedo*, which belongs to the same stage of Platonic thought, and may perhaps have been written somewhat earlier.

In the first place we are definitely informed¹ that, quite apart from the world of sensible things, which, being subject to the Heracleitean flux, can never be objects of knowledge, there are certain perfect and immutable forms, εἶδη αὐτὰ καθ' αὐτά. The exact significance of the phrase αὐτὰ καθ' αὐτά is not easy of determination, but in the light of Aristotle's² evidence it seems plain that the εἶδη are transcendental unities,

¹ *Rep.* 476 A; 596 A; *Phaedo* 100 B seq.

² *Met.* A. 987^b 7.

exalted in some vague and mysterious way above the world of sensible phenomena by reason of their utter perfection and immobility. The ideas, then, are *αὐτὰ καθ' αὐτὰ* chiefly in virtue of the sharp contrast drawn between them and material things, for that they had some connexion with one another, and with the idea of Good, is an inevitable consequence of the dialectical scheme propounded in Book VI.

Further, we are told that the things of sense, through *μέθεξις* in *εἶδη*, become possessed of certain characteristics, and are called by certain names and described in certain terms, an attempt thereby being made to explain the possibility of predication¹. Every predicate corresponds to an immutable idea, in which the particular of which it is predicated participates. Here again one is unable to render a satisfactory account of the word *μέθεξις*. The qualification, *ὅπη δὲ καὶ ὅπως προσγενομένη*, introduced at *Phaedo* 100 D, certainly shows that the method was but hazily conceived in the mind of Plato himself, and that the import of the word is mainly metaphorical, like that of the kindred term *μίμησις*, which occurs more frequently, though not exclusively, in the later dialogues². By the very vagueness of its statement the doctrine was assuredly exposed to the literal interpretation which is ridiculed in the *Parmenides*, but that this interpretation was Plato's deliberate meaning in the *Phaedo* and the *Republic* we have no justification for saying.

Such then is the nature of the *εἶδη* which form the ground-work of the dialectical process of *Republic* VI,

¹ See *Ar. Met.* A. 987^b 9, 10.

² Cf. *Rep.* x. 597 seq.

a process which, in contradistinction to the inferior system of *διάνοια*, leads directly from the assumption of hypotheses to a first cause of all, and is in no way dependent upon the things of sense. Whereas *διάνοια* proceeds from the assumption of hypotheses to a conclusion, dialectic proceeds upwards from hypothesis to hypothesis, until the idea of Good, upon which all other ideas depend, is in sight. Once the *ἰδέα τἀγαθοῦ* is reached, the hypotheses through which it is attained become realities; they are no longer ideas hypothetically asserted but actively realised. The ideas which are thus hypothetically assumed are illustrated chiefly by the universals of mathematics, and one may conclude that it was chiefly through ideas of this nature that Plato thought of rising to a knowledge of the Good; but, on the analogy of the converse process of *λόγοι* mentioned at *Phaedo* 101 D, and from the fact that *ζῶα*, *φυτευτά*, etc., are at 510 B, 511 A said to serve as *εἰκόνες* in the lower *νόησις*, one would conclude that other universal hypotheses too, such as the assumption of an *αὐτὸ τὸ ζῶον*, are conceived of as contributing some share to the realisation of the Good. As to the function of *λόγοι*, it would appear that a *λόγος* or definition is the mental or verbal counterpart of the *εἶδος* whose existence is asserted, and that the *λόγοι* play an important part in the dialectical process. The first step is to postulate an *εἶδος*, the next to define it, then, in virtue of the knowledge thus gained, an *εἶδος* of a yet higher order is postulated until the *ἰδέα τἀγαθοῦ* is reached. When the *ἰδέα τἀγαθοῦ* has been defined and grasped, we have not only true knowledge but true being, for in the idea of Good knowledge and

being coincide, and the mere fact of attaining to it has proved that our λόγοι were correct representatives of the ideal reality. Thence, as Plato says, the dialectician may descend with confidence in the line of the εἶδη, verifying all the assumptions that he originally made; the ὑποθέσεις have now become ἀρχαὶ in virtue of their connexion with the ἀρχὴ ἀνυπόθετος.

The system of knowledge, then, as delineated in the *Republic*, is at best a sketch. It is shadowy and indefinite, and proclaims itself a product of immature thought. It shows no comprehension of the essential differences in general predicates, no consciousness that some have a relative, others a substantive, significance. In short, the scheme must not only be re-stated, but re-thought, before any satisfactory advance can be made; and before it can be re-stated, or even re-thought, the whole subject of predication and thought must be thoroughly analysed, investigated, and systematised. To this preliminary task Plato addresses himself especially in the *Parmenides*, *Theaetetus*, *Sophist* and *Politicus*; the greater task of re-thinking and re-stating his earlier scheme belongs chiefly, though not exclusively, to the *Philebus* and *Timaeus*. I now propose to deal with some of the most striking contributions of the *Parmenides*, *Theaetetus* and *Sophist* to the logical problem, reserving for further treatment the constructive results of the *Politicus*, *Philebus* and *Timaeus*.

The first half of the *Parmenides* consists mainly of an account of the ideal theory of the *Phaedo* and *Republic*, followed by a systematic criticism of the theory as it was stated in those dialogues. First of all we

remark that the young Socrates, who is introduced as the exponent of the theory, and of its importance in the problem of predication, displays considerable aversion to assuming ideas to correspond to every predicate; also that there seems to be a tendency to draw distinctions within the ideal world, and to class certain ideas together, instead of collecting them under the heterogeneous category that *Republic* 596 A implies. Here ideas of qualities, of ethical notions, of natural species, of meaner objects, are enumerated separately, as if it were unconsciously felt that they are essentially distinct from one another. Socrates, though assenting cheerfully to the assumption of ideas of qualities and of ethical notions, seems less convinced of the existence of ideas of natural kinds, and his whole soul revolts from the thought of ideas of such things as hair, mud, dirt: Parmenides, however, rebukes him, on the ground that such a feeling is unworthy of the true philosopher. "You are young, Socrates," he says, "and when philosophy has got a firmer hold of you, you will not despise even the meanest things"—a remark which should be borne in mind as indicating in general the line of development which the young Socrates, and Plato, whom he represents, may be expected to take.

The destructive criticism that follows is well known to every reader of Plato. If the particular participates in the idea, it must participate either in the whole or a part; if in the whole, the idea is not one but many; if in the part, the idea becomes divided, and is many. Hence the idea is either not a unity, or else particulars cannot participate in it. Furthermore, if every plurality of particulars called by the same name has an idea

corresponding to it, the idea will be indefinitely multiplied, for the idea when added to the first group constitutes another group, for which another idea must be postulated, and so on *ad infinitum*. These two arguments, it must be noted, are aimed, not so much at the existence of ideas, as against the statements regarding their nature which were made in the *Phaedo* and *Republic*. It is not the existence of ideas, but their supposed actual immanence in particulars, and their intimate connexion with predication, that is chiefly attacked—a conclusion which is confirmed by the further steps of the controversy.

Socrates, to extricate himself from these difficulties, suggests that the fatal consequences might not follow if the idea were conceived of as a *νόημα* existing only in *ψυχαι*. Parmenides, however, points out that every *νόημα* must be supposed to have an object, and that this would only give us the old idea back again, remarking further that such a conception of the idea in no way justifies an inherent connexion between ideas and phenomena. To this Socrates replies, as if by sudden inspiration, that perhaps the connexion is not *μέθεξις*, after all, but the ideas are to be thought of as *παρδείγματα ἐστῶτα ἐν τῇ φύσει*, also that particulars partake of ideas in virtue of resemblance and nothing else. But even this brilliant suggestion is of no avail so long as he holds that the predication of likeness involves the existence of an idea, by reason of which the particulars resemble each other and the idea. The infinite regress meets us still, and we have made no progress.

But, says Parmenides, the greatest difficulty of all

is yet to come. If ideas are to be *αὐτὰ καθ' αὐτά*, separately existent apart from particulars, then they are altogether remote from the sphere of human thought and action, and cannot possibly serve as objects of human knowledge: if they have relations, they are related to one another only, and have no intercourse with the things of sense which are said to resemble them. Yet, without a belief in their existence, what hope is there of attaining to truth? There must be eternal fixities somewhere on which the mind can rest, and before Socrates can hope to attack so great a dilemma as this his intellect must be trained and disciplined by the severest logical method.

We have seen, then, that the first portion of the *Parmenides* expresses considerable dissatisfaction with the earlier statement of the ideal theory, and at the same time throws out various suggestions with a view to its amendment. Whither all this self-criticism is tending has not yet become clear, but the main results may be summarised as follows. In general, we note a pronounced hesitation in admitting *εἶδη αὐτὰ καθ' αὐτά* of every predicate, coupled with a tendency to distinguish between different classes of *εἶδη*; secondly, we have an assurance from Parmenides that there will come a time when Socrates will not disdain the lowliest things of nature. In particular, it is shown that the inseparable connexion of ideas with the possibility of predication cannot be reconciled with any view of the nature of the ideas (and we may therefore suppose that Plato henceforward dispenses with that connexion); secondly, that the doctrine of immanence, if understood literally, is inconsistent with the nature of the idea,

whether it be transcendently existent, or a *νόημα* in the human mind, whereas the expression *μίμησις*, provided there be no necessity to postulate an idea for every predicate, is perhaps less open to objection; thirdly, that the *εἶδος αὐτὸ καθ' αὐτὸ* can never be merely a *νόημα* in the human mind, for a *νόημα* implies an object, an existent something beyond itself, and this is only the old idea back again; fourthly, that the ideas, although they have been completely severed from the world of time and space, are yet indispensable in the search for truth, since man must always have beyond him a goal on which his eyes may rest. Without some eternal fixity the art of dialectic must perish.

The exact relation borne by the hypotheses of the *Parmenides* to the former half of the dialogue has always been matter of dispute. Ostensibly, of course, they furnish an exercise in logical discipline, and the method employed is similar to the propaedeutic exercise of *διάνοια* in the *Republic*. That some intimate connexion, however, exists between the subject-matter of the two parts must be the conclusion of all who take Plato seriously. It will be remembered that, at the very beginning of the dialogue, Socrates, relying on the theory of predication that is stated in the *Republic*, joined issue with Zeno, and saw no difficulty in attributing contrary predicates to concrete things, but that on the other hand he did think it impossible that contrary attributes should pertain to the transcendental ideas which informed particulars, and gave them their existence. Such being the state of mind of Socrates at the outset, it would seem reasonable to look for some solution of his original difficulty in the

discussion of the eight hypotheses; also, inasmuch as his explanation of contrary predication as connected with ideas has completely broken down, one would expect some light to be thrown on the circumstances of contrary predication. By a brief enumeration of the salient points in the eight hypotheses, I hope to show not only that these expectations are realised, but that considerable progress is made towards the solution of the great dilemma concerning the ideas with which the first part closed.

In the discussion of the first and fourth hypotheses, which stipulate the existence of $\tau\acute{o} \epsilon\nu$, when $\delta\nu$ implies self-identity and nothing more, we find it impossible to predicate anything either of $\tau\acute{o} \epsilon\nu$ or of $\tau\acute{\alpha}\lambda\lambda\alpha$, and where predication is impossible, knowledge is *a fortiori* impossible. On the other hand, from the reasoning of Hypotheses VI and VIII, we conclude that if $\tau\acute{o} \epsilon\nu$ is supposed to be utterly non-existent, it is equally certain that neither predication nor knowledge is possible, whether of $\epsilon\nu$ itself or of $\tau\acute{\alpha}\lambda\lambda\alpha$. If, however, $\epsilon\nu$ be conceived of as existing, not merely in self-identity, but in relation to $\tau\acute{\alpha}\lambda\lambda\alpha$, all manner of predication may take place both in regard to $\epsilon\nu$ and to $\tau\acute{\alpha}\lambda\lambda\alpha$, and knowledge of both $\epsilon\nu$ and $\tau\acute{\alpha}\lambda\lambda\alpha$ becomes possible (Hyp. II and III).

Now it is of course obvious that the $\epsilon\nu$ of Hypotheses I and IV has an immediate reference to the $\epsilon\nu$ of the Eleatic Zeno, and that the inconsistencies arising from his peculiar position are here conspicuously exposed. We are, accordingly, led to infer that $\tau\acute{o} \epsilon\nu$ throughout the hypotheses refers in the first instance to the one supreme reality, whether it be conceived according to

the Eleatic or the Platonic scheme. The main result of the six hypotheses mentioned will then be this. The supreme reality, if it is to be known, must have relations with every form of reality, and must have a connexion with all inferior existences. In short, the supreme idea, the *ιδέα τὰγαθοῦ*, or whatever else it may be termed, is known only in conjunction with other ideas, and with the infinite flux of sense. Conversely, the flux of sense and the other ideas are to be known only in so far as they are related to the one supreme unity. And if a subordinate idea be for the moment regarded as *ἐν*, as a unity apart from the supreme idea, it too is to be known only as it enters into combination with the infinite many.

Hypotheses v and vii add to our information concerning this supreme unity. From Hypothesis v we learn that *τὸ ἐν* may have a negative determination applied to it, and yet be capable of being known, and of bearing descriptive epithets. Here we have of course a foretaste of the justification of *τὸ μὴ ὄν* in the *Sophist*; it is implied that negative may be as true and as valuable as positive predicates. Hypothesis vii points to a distinction between opinion and knowledge. Assertion of some sort is shown to be possible even where the existence of an all-embracing unity is denied, inasmuch as the plurality of things may be gathered together in aggregates (*ὄγκοι*), each of which, possessing an apparent unity, enters into apparent relationships with itself and other things. Being mere aggregates, however, they have no organic coherence and fall to pieces when analysed.

Such is the main outcome of the discussion of the

eight hypotheses, but a closer inspection reveals direct reference to the other problems that are before Plato's mind. In the first place, *αὐτὸ τὸ ἐν* at 129 c was taken as an example of an *εἶδος αὐτὸ καθ' αὐτό*, and Socrates there expressed great curiosity to know whether the idea *ἐν* could be shown to be *πολλά*, and whether in general ideas themselves, in contradistinction to particulars, are capable of diverse predicates, i.e. of communion with one another. The results of the hypotheses are an ample proof that such predication is possible, and that *κοινωνία* of some sort must exist: *αὐτὸ τὸ ἐν*, to be known, must be capable of receiving all manner of predication, and of entering into all kinds of relation. But for the final discussion of this *κοινωνία* we must look to the later *Sophist* and *Timaeus*.

Meantime has any light been thrown on the theory of predication itself? In a very significant passage at 143 D, E, it is carefully shown that as soon as any notion, however simple, comes before the mind for analysis, number is at once generated, and the mind is forced to count. The notion of number, then, appears to be a necessity of the mind's action. This principle applies not only to number, but to all predicates of a similar kind, as the whole exposition proves. However slight may be the notion under examination, however restricted and confined, the mind in passing judgment is forced to predicate and to make use of a number of common terms such as like, unlike, same, other, which express the various relations that one thing bears to another. Hence, though no dogmatic teaching about predication is to be found, it is taken

for granted from first to last that predication is a *sine quâ non* of logical analysis, and that no transcendental explanation need be assumed.

The latter half of the *Parmenides*, then, has made a considerable contribution towards the solution of the problems of the first half. Predication, without which knowledge cannot possibly advance, is shown to be a natural activity of the intellect, and the use of predicates of number, likeness and difference, equality and inequality, etc., is indispensable to the consideration of any subject whatsoever. Moreover, the ideas and the supreme idea, if they are to be not merely existent, but objects of knowledge, must have a real and lasting relation with one another and with the world of sense. Conversely, the world of sense, in so far as it may be known, must be regarded as entering into relation with the supreme unity and its determinations.

Passing on to the *Theaetetus*, we are confronted with another attempt to solve the problem of knowledge. The *Parmenides*, after first demonstrating the impossibility of regarding εἶδη αὐτὰ καθ' αὐτὰ as objects of knowledge, so long as they retain the characteristics ascribed to them in the *Phaedo* and the *Republic*, proceeds to delineate the necessary character of εἶδη if they are to be not merely ὄντα but ἐπιστητά. The *Theaetetus*, falling back on the general question "What is knowledge?" leads by a process of exhaustion to the same conclusion as the *Parmenides*. Whereas in the *Parmenides* Plato was content to investigate and partially to reconstruct his own view of knowledge, he is now determined to deal no less faithfully with the

theories of others, that he may be the more certain of his own system. Hence, in this dialogue and in the *Sophist*, we not only see Socrates endeavouring to test the mental productions of Theaetetus, but Plato himself examining the soundness of his predecessors in philosophy, resolved to discard the dross and retain the gold tried in the furnace of his dialectic.

Theaetetus' first thesis makes *ἐπιστήμη* identical with *αἴσθησις*, and in the lengthy conversation that follows we have an estimate of the value attached by Plato to the perpetual flux of sense. By a combination of Protagorean with Heracleitean principles¹ he evolves a theory of sensation by which the fact of sensation depends entirely on the juxtaposition of object and subject; *τὸ αἰσθητὸν* and *τὸ αἰσθανόμενον* are each a movement that is generated by the contact. Thus neither the sensation of whiteness nor the colour white has any existence in itself; they are simply the product of the object as *ποιοῦν* and the subject as *πάσχον*. As a result, the sensation of whiteness is supposed to reside in the eye, and the colour white is projected outwards by the mind and made to inhere in the object.

This explanation of sensation, which cannot be assigned to any contemporary, and would therefore appear to be that of Plato himself, clearly attributes no permanent reality to the *κινήσεις* of perceiving or of being perceived: they are *γενέσεις* that come into being and again depart, varying in character, not only with different subjects, but with the same subject under different circumstances. We conclude, therefore, that

¹ *Theaet.* 182 A, B.

hot and cold, hard and soft, wet and dry; white and black, and the like, have no absolute existence; they count for nothing in the search for reality; they are but the momentary product of the interaction of subject and object. Since they have no existence except in the consciousness of the percipient, and vary indefinitely with different persons, and with the same person at different times, they have no fixed value, and cannot be objects of knowledge. This argument, besides being of supreme weight for the refutation of Theaetetus' first thesis, is of great importance as indicating the tendency of Plato's thought; the character of sensible qualities as secondary products of the activity of mind is maintained throughout the later dialogues, and finds expression in the *Laws*¹. Moreover, it would be superfluous, in the light of this exposition, to wonder whether Plato still has recourse to an immanent idea to make a particular thing white or hot or sweet, as the language of the *Phaedo* and the *Republic* would indicate. Such qualities now possess neither fixity nor reality; that reality of a kind must appertain to the *ποιεῖν* and *πάσχειν* which generate them is proved by the later *Sophist*, and marks an important step in Plato's development.

The interest of the argument next centres round Theaetetus' second thesis, viz., *ἐπιστήμη* is *τὸ ὁρθὰ δοξάζειν*. Socrates has discovered that the fact of perception is not concerned with sense merely, but that the soul *αὐτὴ δι' αὐτῆς* compares the data of sensation and passes judgment upon them, assigning or denying to them certain *κοινά*, or general predicates. These

¹ *Laws* 897 A.

κοινά, ὅμοιον, ἀνόμοιον, ἔν, πλῆθος, etc., carry our thoughts back to the *Parmenides*, where we had a practical demonstration of the fact that certain general predicates are necessary parts of the soul's machinery. The general aim of this portion of the dialogue, then, is to show that true opinion, or the process of apprehending correctly certain *κοινὰ* of relation, does not constitute knowledge. After a long digression on the nature of false opinion, in which the solution of the *Sophist*, though not directly stated, is nevertheless implied, and in which *δοξάζειν* is shown to apply not merely to sensibles but to mental abstractions as well, the main thesis is summarily disposed of by a reference to the rhetorical art. A man may conceivably pass a true judgment without having any clear grasp or realisation of the matter at issue. True opinion may be a factor in knowledge, but we have not yet seized upon the vital constituent.

An attempt is immediately made to supply the deficiency by the addition of a *λόγος*, i.e., some verbal expression of the content of true opinion. Various interpretations of the word *λόγος* are then mentioned; *λόγος* may mean (a) the mere verbal utterance, or (b) the enumeration of elements, in which the Cynics and Socrates supposed knowledge to consist, or (c) the definition by characteristic difference, Plato's own acceptance of the term. Each of these processes in turn is proved to be insufficient to explain the fact of knowledge; they all presuppose the existence of something else which is known and is the object of knowledge, whereas they are merely subsidiary to its attainment.

We are, therefore, forced to the conclusion that no

theory of knowledge in which the existence of ideas is not assumed can hope to pass the test of criticism. Mere sensation, as Heracleitean and Protagorean doctrine alike demonstrate, can never furnish a standard. The process of *δοξάζειν*, or apprehension of relations, may be useful enough, but it is not the sum-total of knowledge. Even the scientific expression of such judgments does not bring us any nearer the goal. Our only hope is to discover as quickly as may be the nature of those *εἶδη* for which we have long been seeking.

In the *Sophist* there are four subjects that demand our attention—the method of *διαίρεσις*, the problem of *μὴ ὄν*, the *μέγιστα γένη*, and the definition of *οὐσία* as *ἡ τοῦ ποιεῖν ἢ πάσχειν δύναμις*. All of these, with the exception of the last, are concerned with the method rather than the object of knowledge, and hence we look to the *Sophist* for enlightenment on the processes of thought and predication rather than for an exposition of the ideas. The method of *διαίρεσις*, proceeding by subdivision and classification, was first described vaguely in a much earlier dialogue, the *Phaedrus*, and there it was impressed upon us that the essential of good *διαίρεσις*¹ is to divide *κατ' ἄρθρα ἧ πέφυκε καὶ μὴ ἐπιχειρεῖν καταγνύναι μέρος μηδέν*. The same rule is enforced in the *διαίρεσις* of the *Sophist*, as well as in the similar process in the *Politicus*. The mind, in virtue of its innate power of distinguishing *ταυτόν*, *θάτερον*, *ὅμοιον*, *ἀνόμοιον* and the other *κοινά*, starts from the observation of one common element, and then, proceeding by *διαίρεσις κατὰ μέρη*, seizes on the characteristic

¹ *Phaedrus* 265 E.

difference of the object to be defined. All definition must be preceded by *διαίρεσις*, and since definition is the verbal expression of a truth which is known, it follows that *διαίρεσις* will be an important adjunct to the process of knowledge in general.

The method of *διαίρεσις*, when applied to the *Sophist*, leads to a consideration of the problem of *μὴ ὄν*, and finally to the whole question of predication. In the course of a long argument, containing criticisms of the Eleatic and various other schools, it is proved that *ὄν* and *μὴ ὄν* may not merely denote Being and Not-Being in the absolute sense, but may signify the positive and negative determinations respectively of the thing to which they are applied. *Ὅν*, in short, is copulative as well as substantive, and in the former sense both *ὄν* and *μὴ ὄν* may be applied to the same thing; *μὴ ὄν* is simply *θάτερον*, a category that inheres in all existence.

Closely connected with the subject of *μὴ ὄν* is the analysis of the five *μέγιστα γένη*, in which are included the final analysis and solution of the problem of predication, to which there have been continual references in the *Parmenides* and *Theaetetus*. He that would deny the possibility of predication subverts every attempt to form a theory of the universe, and hence the possibility of predication must be accepted as a necessary, axiomatic truth. But, if there is to be predication, we must concede a certain *κοινωνία* or power of communicability in predicates, since the same thing is capable of receiving various attributes and of entering into various and even contradictory relations. The five great *γένη* or categories of *ὄν*,

ταῦτόν, θάτερον, στάσις, κίνησις are then distinguished, and it is shown that ὄν, ταῦτόν and θάτερον universally, and στάσις and κίνησις generally, are found to inhere together in the same thing, and hence may be said to have communication one with another. But although these categories are termed εἶδη and are said to κοιρωνεῖν the one with the other—the requirement made in the *Parmenides* for the ideal world no less than the sensible—there is no indication whatever that ταῦτόν, θάτερον, etc., are the transcendental ideas which are to be the goal of knowledge; they are instruments merely which are to aid in the search. When we come to the *Timaeus*¹, indeed, we find them definitely classified, not as ideas, but as methods of the soul's activity.

The conception of falsity, too, is illuminated in the sections that follow. Thought, opinion, and imagination are all sometimes false, but this falsity consists not in the assertion of not-being or nothing, but in the attribution of things that are not as though they were.

By far the most significant teaching of the *Sophist* is to be found at p. 247 E, and the sections that follow. The materialists, who believe in nothing that they cannot seize with their hands, are confronted with the εἰδῶν φίλοι, who place οὐσία and γένεσις at opposite poles, and deny that there can be any communication between them. These latter are, of course, the supporters of the theory of ideas as originally formulated in the *Phaedo* and *Republic*, and Plato, now bent on reconciling the two conflicting modes of thought, seeks some con-

¹ *Tim.* 35 A seq.

ception of οὐσία which may bridge the gulf that yawns between the ideal and material worlds. Recalling the doctrine of sensation which he had put forward in the *Theaetetus*, he offers a novel definition of οὐσία, viz., ἡ τοῦ ποιεῖν ἢ πάσχειν πρὸς τὸ σμικρότατον δύναμις. Ποιεῖν and πάσχειν are, of course, manifested in various forms, and refer both to the physical activity and passivity of sense, and to the psychical γιγνώσκειν and γιγνώσκεσθαι. It is to be noted, however, that whereas the mind or soul in sensation is πάσχον, in the region of knowledge it is ποιούν, and the object of its knowledge, οὐσία, is πάσχον. But the main argument centres in the fact that subject and object are equally in movement, and are therefore equally real forms of οὐσία.

A further step is taken at p. 249. Anything that is ὄντως ὄν must surely, says Plato, possess, not merely movement, but νοῦς, ζωή, and ψυχὴ as well. The statement is, of course, an echo of that theory of soul as being the first and only source of movement which was formulated first in the earlier *Phaedrus*¹ and remained to the end the permanent basis of Plato's philosophy². The important result in the present instance, however, is the inevitable inference that not merely ἡ ψυχὴ ἢ γιγνώσκει, but τὸ γιγνώσκόμενον, whatever it be, is akin to νοῦς and ζωή and ψυχή, and must therefore be a form or manifestation of soul. Even the objects of sense, despised though they be because of the Heracleitean flux, may now serve a purpose in the progress of knowledge. Since they too, in some mysterious way, are ποιούντα, no less than ψυχή, there must be a reality of some sort underlying them; and we have been assured

¹ *Phaedrus* 245 c.

² *Laws* 896 seq.

that the highest reality of all is to be found in the nature of mind and soul.

But though activity, life, soul, mind are inseparable from the *ὄντως ὄν*, we must be careful, says Plato, not to refuse it also the attributes of permanency and stability. If these were lacking, truly our newly-found reality would be little better than the *ῥέοντα* of sense, and make us despair once more of attaining to knowledge. Reality, it is true, is possessed of activity and life, but that life and activity are manifested under permanent conditions and according to eternal, immutable modes (*κατὰ ταῦτὰ καὶ ὡσαύτως καὶ περὶ τὸ αὐτό*). Hence neither motion nor rest is the exclusive attribute of the *ὄντως ὄν*.

To sum up the results of our investigation, we have, first of all, justified predication on the ground of necessity, and have vindicated the right of the soul to pass judgment on any data supplied to her without the mediation of any exalted and mysterious existences called ideas. Next, in regard to the ideas, it was found at the beginning of the *Parmenides* that so long as the idea possesses the characteristics ascribed to it in the *Phaedo* and *Republic*, knowledge must be forever beyond our reach, and yet that unless the existence of an idea of some sort be assumed, knowledge must remain equally impossible. The *Theaetetus* corroborated this by showing successively that neither sensations, nor those common forms of predication which are essential to the activity of thought, nor yet the scientific expression of thought by definition, connotative or denotative, can in themselves constitute knowledge; they are the instruments, not the objects, of knowledge. We are,

therefore, obliged to postulate ideas, and there is not wanting a hope that their true nature will finally be revealed, considerable illumination having already been gained from the *Parmenides* and the *Sophist*. For the ideas of the older time are being divided up into classes. The predicates $\delta\upsilon$ and $\mu\eta\ \delta\upsilon$, $\delta\muοιον$ and $\alpha\nuόμοιον$, and the like, are found to be $\muέγιστα\ γένη$, forms of thought, essential modes of the soul's activity, and, though they may retain the old title of $εἶδη$, they are very different in kind from the $εἶδη\ αὐτὰ\ καθ'\ αὐτὰ$ of the *Phaedo*, nor do they carry the significant attributes of the latter. Sensible qualities, being simply $γενέσεις$, have no fixity at all, and cannot assume the importance even of the $\muέγιστα\ γένη$. Ethical conceptions of $\alphaγαθόν$, $κακόν$, and the like, are in the ordinary way obtained chiefly through a diligent comparison of past and future¹, and are relative to circumstance; on the other hand, there is a reference to $αὐτὴ\ δικαιοσύνη$, $αὐτὴ\ ἀδικία$ at *Theaetetus* 175 c. It is, therefore, uncertain for the present whether there are still to be ideas of moral notions or even of natural species, though in regard to these last we have been told that the meaner things of nature have an equal claim to respect with the greater.

Under these circumstances it can hardly be denied that the ideal doctrine of the *Republic*, in which there was an idea for every predication, did not stand for any eternal and unassailable truth even in Plato's own mind. One may almost say, in the words of Jowett², that the earliest ideas were only a "semi-mythical form in which he attempts to realise abstractions," and they certainly

¹ *Theaet.* 186 A, B.

² *Introd. to Cratylus*, p. 623.

were to a large extent "replaced by a rational theory of psychology." Plato, however, is bent on retaining the machinery and terminology of the ideal theory; the assumption of these eternal existences is still indispensable, if he is to explain the universe at all. With the aid of the ideas he kept the Sophists and Cynics at bay while he deliberated about his answer to their most pressing question, viz., "What is Predication?"; and the ideas must still be his stimulus and inspiration if he is yet to satisfy them on the deeper subjects of Knowledge and Being.

For the present, therefore, we are assured that the ideas still exist, though they are fewer in number than heretofore. Furthermore, reality, both as knowing and as known, as acting and as being acted upon, has been declared to be of the nature of mind, and it is in the light of these two general observations that we shall now proceed to interpret the ontology of the dialogues that follow.

ESSAY II.

THE ANALOGY OF THE ARTS AND ITS APPLICATION IN THE *POLITICUS* AND *PHILEBUS*.

A FAVOURITE and effective device of Plato, when intent on the elucidation of ethical and metaphysical truth, is to introduce one or other of the constructive or imitative arts to serve as an illustration. In the earlier dialogues simile and application are alike simple: the statesman is the pilot of the state, the philosopher is the doctor of souls, and so on. But as Plato's powers matured, and his aims grew more ambitious, he began to make a more elaborate and significant use of this instrument. At the beginning of *Republic* x, for instance, the constructive art of the carpenter and the imitative art of the painter serve to illuminate the nature of the ideas, and the kind of relation borne by them to the world of sense. The *θεός*, who is parallel to the carpenter, makes the ideal bed, which is one and imperishable; the *τέκτων*, taking the ideal bed as his *παράδειγμα* or model, constructs a material bed; while the painter, with only the material bed as his model, makes an image which is in the third degree removed from ideal truth. The immediate purpose of this, of course, is to degrade mimetic art considerably, and to

place it far below constructive art in the scale of truth ; incidentally, however, Plato has shown how valuable an ally the arts may become in the exposition of the ideas. This, coupled with the intimation we had in the *Parmenides* that the ideas might be *παραδείγματα ἐστῶτα ἐν τῇ φύσει*, and that *μίμησις*, rather than *μέθεξις*, should describe the relation borne to them by *γιγνόμενα*, would reasonably lead us to expect a more extensive use of this metaphor in the dialogues we are now considering. As a matter of fact, Plato in the *Politicus* and the *Philebus* is very largely dependent on constructive art for the adequate expression of his doctrine. In the present paper, therefore, I propose to examine the application of this analogy in these dialogues, hoping that in the sequel some further light may have been thrown on the nature of the ideas, and consequently on the system of knowledge which is the goal of our endeavours.

The first object for our consideration will be a remarkable passage in the *Politicus*, in which Plato gives utterance to his high estimation of an art which has already come prominently forward in the *Protagoras*¹—the art of measurement. At 283 B, Socrates, in order to show his respondent that their digression on the art of weaving was not too lengthy, declares that the whole nature of excess and defect must be made clear. In the first place, he says, measurement of excess and defect is of two kinds, the first being that which deals with relative size and merely compares one object with another, the other that which judges things according to their approximation to a *μέτρον*, a

¹ *Protag.* 356 D.

mean, a fixed standard. The latter is by far the more important ; in fact, it is the principle upon which all *γένεσις*, all production, is based, and without it the arts could not exist. Every artist strives to attain a standard, and in so far as he falls short of this standard, is his work faulty and bad. Excess and defect are real evils, and to guard against them is the first necessity of art.

Now it is plain that the usual connotation of *μέτριον* and of *μετρητική* has been considerably extended in this exposition. At the outset, *τὸ μέτριον* would seem to signify a unit or norm of measurement, in reference to which things relatively great or small may be accurately measured. But this simple meaning is soon superseded, for at 284 A seq. we learn that the arts make use of *τὸ μέτριον*, not as a norm or unit of measurement, but as an ideal, a standard, by the attainment of which alone things *ἀγαθὰ* and *καλὰ* are produced. Hence *μετρητική*, in this new Platonic sense, is not merely an art of measurement, but an art which compares the productions of *τέχνη*¹ with *τὸ πρέπον καὶ τὸ δέον*. It is a critical science, which passes judgment on *σκευαστὰ* in virtue of a fixed standard, with which it is acquainted. At the same time it is to be noticed that the connexion of *μετρητική* with spatial and mathematical measure is apparently maintained throughout, inasmuch as it is described at the final summing-up² as including *ὅποσαι τέχναι τὸν ἀριθμὸν καὶ μήκη καὶ βάθη καὶ πλάτη πρὸς τὸ μέτριον καὶ τὸ πρέπον καὶ τὸν καιρὸν μετροῦσι*. In short, *μέτριον*, in relation to the arts, is an ideal standard,

¹ 284 E.

² 284 E.

consisting of certain fixed mathematical combinations, or proportions, to which the products of the arts should approximate.

Such being clearly the significance of τὸ μέτριον in the arts, our next step will be to determine its value when employed in the demonstration of metaphysical truth. At 284 D Socrates expresses his conviction that, at some future time, this notion of τὸ μέτριον will be called into requisition πρὸς τὴν περὶ αὐτὸ τὰκριβὲς ἀπόδειξιν. We therefore expect to hear more of it, and our expectation is fully realised in the *Philebus*.

At 16 B, C, of the *Philebus* there occurs a remarkable reference to the process of διαίρεσις, of which Socrates remarks¹, ἥς ἐγὼ ἐραστής εἰμι αἰεί. This method has been responsible for every great discovery of the arts, and it is based on the principle that ἐν and πολλὰ are to be found everywhere, and that πέρας and ἄπειρον, limit and infinity, are inherent in the very nature of things. It is, therefore, the duty of the dialectician to posit one εἶδος for every infinity of particulars, and not to rest satisfied until he has discovered the definite number (ὁπόσα) of species that are to be inserted between.

This general reference to πέρας and ἄπειρον, as representing in the abstract that which can be accurately estimated and defined, as contrasted with that which defies determination and classification, prepares us for the more abstruse discussion of these notions at 23 C seq. At this point of the dialogue Socrates has proved that τὸ ἀνθρώπινον ἀγαθόν (the discovery of which is the sole aim of the treatise), is to be identified

¹ Cf. *Phaedrus* 266 B.

with neither of the two claimants, νοῦς and ἡδονή, in separation, but that it must consist in a μικτὸς βίος, which is the compound of both. It is at the same time maintained by Socrates that the ingredient in this μικτὸς βίος which makes it ἀγαθόν is more akin to νοῦς than to ἡδονή, and that, if this can be proved, the life of reason must be awarded the second prize. With a view to demonstrating this superiority of νοῦς over ἡδονή, he proposes to examine both, and to place them, according to their merits, in one or other of four classes, within which, he says, πάντα τὰ νῦν ὄντα ἐν τῷ παντὶ are contained.

Now the classification here referred to, in which the notions of πέρας and ἄπειρον reappear, is primarily a dissection, as it were, of the universe based on metaphysical principles. Such is the immediate inference one draws from the impressive manner in which the subject is introduced (τὸν θεὸν ἐλέγομέν που τὸ μὲν ἄπειρον δεῖξαι τῶν ὄντων, τὸ δὲ πέρας), and from the fact that the first intimation of the division into ἄπειρον and πέρας¹ came as a suggestion regarding the solution of those inconsistencies which marred the theory of ideas. Moreover, the divisions themselves accord most easily with this interpretation. It is not the first time that the notions ἄπειρον and πέρας have been conjoined in a metaphysical analysis of reality. In the second and third hypotheses of the *Parmenides*, where a similar classification is evolved, there is an undoubted reference to metaphysical theory². There we find ἐν representing the supreme ideal unity, and τὰλλα the world of phenomena, also the adjectives πεπερασμένα

¹ 15 A, B.

² *Parm.* 144 E; 158 D.

and ἄπειρα applied as essential characteristics to τὰλλα. These four correspond in inverse order to the ἄπειρον, πέρασ, μικτόν and αἰτία of the *Philebus*. Our conclusion is reinforced again by the fact that the fourth and greatest class, the αἰτία τῆς μίξεως, is proclaimed to be νοῦς, which governs both universe and individual, since our examination of the *Sophist*¹ has proved indisputably that νοῦς is henceforward to have the pre-eminence in Plato's explanation of the universe.

Since the classification then appears to rest on a metaphysical basis, one would expect to find the metaphysical principle faithfully adhered to throughout. Plato's avowed object in this dialogue, however, is not metaphysical but practical; he wishes to arrive at a logical determination of the ἀνθρώπινον ἀγαθόν. Hence the metaphysical classification throughout the argument is made subservient to practical considerations, and it is apparently appropriated simply in order that some unique authority, as it were, may support Socrates in his estimate of the three different lives. This peculiarity, combined with the generally confused and fragmentary state of the dialogue, makes it extremely difficult to arrive with certainty at the original significance of the four γένη. The μικτόν γένος, which should properly include only the unions of metaphysical ἄπειρα and πέρατα, is made to contain the μικτός βίος, a union of an ἄπειρον, ἡδονή, not with πέρασ, but with an αἰτία (νοῦς); ἡδονή², too, is classed at one time under τὸ ἄπειρον, at another under τὸ μικτόν; and at 26 A, B, ὥρα, which, in so far as it denotes a certain atmospheric state, is surely to be ranked with χειμὼν and πνίγος in

¹ *Soph.* 249 A seq.

² 27 E; 31 A, B, C.

a table of metaphysical valuations, is separated from them on the fanciful ground that good things cannot be classed with *ἄπειρα*, which are evil. It is clear that the same principle of classification is not maintained throughout. Plato has, in fact, for the purposes of the dialogue, turned a set of metaphysical distinctions into a loose, popular classification; and, since our aim is to arrive at his metaphysical teaching, we must endeavour to describe the four *γένη* as they appear when divested of those inconsistencies which are peculiar to the dialogue.

It must, first of all, be noted that the whole classification here is based upon the analogy of the constructive arts. The universe is regarded as a living *κόσμος*, a whole compounded of body and soul, and containing within it all inferior bodies and souls. Within this *κόσμος* is going on continually a process of *μῖξις* or *γένεσις* (the very word used for artistic production in the *Politicus*), and all the four kinds of *ὄντα* of which *τὸ πᾶν* consists are, in one capacity or another, involved in this *γένεσις*. Now it was shown in the *Politicus* that the first essential of every art is a *μέτρον*, or ideal standard, in accordance with which the particular product is fashioned. Besides this, however, we know that there is needed first, *ύλη*, or *τὸ πρωτογενὲς κτῆμα* of *Politicus* 288 E, *ἐξ ὧν καὶ ἐν οἷς δημιουργοῦσιν ὁπόσαι τῶν τεχνῶν νῦν εἴρηνται*; secondly, the *ὄργανα συναίτια* of *Politicus* 287 D; and thirdly, the artist or *δημιουργὸς* himself. Of these *τὸ μέτρον* undoubtedly corresponds to *πέρας* in the *Philebus*, inasmuch as it is definitely identified with it at 24 C and 66 A, and is moreover described as being

the cause of μετρίότης and συμμετρία¹ in its μικτά. The artist's ὕλη is to be correlated with the ἄπειρον, into which τὸ πέρας is said to enter, thereby producing a μικτὸν compounded of both². The whole language of the passage implies that πέρας is applied to ἄπειρον as form to material. That the αἰτία is parallel to the δημιουργὸς follows obviously from its description³ as τὸ ποιοῦν and τὸ πάντα τὰ γιγνόμενα δημιουργοῦν. As to the ὄργανα συναίτια, some doubt may at present exist as to their identification, but we cannot go far wrong in connecting them, provisionally at least, with the πέρας, which, in company with τὸ ἄπειρον, is called τὸ δουλεῦον εἰς γένεσιν αἰτία⁴. A more complete analysis of all these conceptions must now be attempted.

Beginning then with the class of ὕλη, what is the essential nature of τὸ ἄπειρον, and what things are included in it? Socrates tells us that it is the class of τὸ μᾶλλον καὶ ἥττον, and that the quality of indefiniteness is inherent in it. Its nature is such as to forbid any application of τέλος or ποσόν; as soon as any such notion is connected with it, it loses its characteristic and ceases to be what it is (αὐτῷ τετελευτήκατον). The class is made up of θερμότερον καὶ ψυχρότερον, ξηρότερον καὶ ὑγρότερον, πλέον καὶ ἔλαττον, θᾶπτον καὶ βραδύτερον, μείζον καὶ σμικρότερον, and the like, of everything, in fact, that admits of τὸ σφόδρα καὶ τὸ ἥρέμα. Τὸ ἡδὺ καὶ τὸ λυπηρόν, therefore, would come under the same category⁵—a fact which is explicitly acknowledged by Socrates quite apart from any reference to the quantitative hedonism of Philebus. At 31 B, it is

¹ 64 E; 65.² 24 C, D.³ 26 E; 27 B.⁴ 27 A.⁵ 28 A; 31 A; 41 D.

true, there is a temporary lapse of consistency, and he speaks of it as a *μικτόν*, but there, as in other places, the metaphysical interest has been superseded, and Socrates is looking at pleasure and pain as concrete facts, and is seeking to define them on a popular basis.

Now this talk of hotter and colder, drier and wetter, with the accompanying statement of their indefiniteness and of the impossibility of applying to them any fixed character, takes our minds back to the earlier part of the *Theaetetus*, where all the qualities dependent on sensation came in for a vigorous examination. As a result, we found that all these qualities, being due to a *κίνησις* between subject and object, had no existence except in the consciousness of the percipient. They were subjective phenomena, varying indefinitely with different subjects and therefore possessing no fixed value. Their apparent externality, too, was due to the percipient subject alone, which projected outside itself a something¹ which could not have come into being apart from itself. *Τὸ ἄπειρον*, then, is the class of hotter and colder, of subjective affections, which vary indefinitely and have no claim on real existence. The comparative form in which they are expressed serves to stamp them with the mark of unceasing variableness, and one feels inclined, with Natorp², to see in them a striking resemblance to the *ὄγκοι* of the *Parmenides*³, which bear relation to one another only, and of which the least part, as well as the greatest, is branded as infinity.

Sensible qualities, then, in general, serve as *ὕλη* in

¹ *Theaet.* 156 E seq.

² Natorp, *Plato's Idēenlehre* (Leipzig 1903).

³ *Parm.* 164, 165.

the production of the *μικτὰ* of the universe. But there are not wanting certain signs which show that a far more subtle conception is, at any rate, at the back of Plato's mind, even though it may not as yet have taken definite shape. At 24 D we hear of ἡ τοῦ μᾶλλον καὶ ἥττον ἔδρα, into which τὸ ποσὸν and τὸ μέτριον are supposed to enter, and which evidently is that which affords a place, a home, for these ἄπειρα, such as they are. Now it is, of course, impossible to conceive of anything as subject to infinite fluctuation, like the ἄπειρα, without at the same time allowing to it extension of some kind, in which the fluctuations may take place; we should remember, moreover, that τὸ μείζον καὶ σμικρότερον¹ is one of the ἄπειρα, and the ἔδρα of an ἄπειρον of this sort would be very definitely extension, and nothing else. Hence the ἔδρα must inevitably be identified with extension, the home of fluctuation and Becoming, although the slight use made of it at this juncture forbids us to lay any great stress on the conception at present. The final analysis of extension does not concern Plato in the *Philebus*, and he may or may not have intended to make it the πέμπτον γένος which is mentioned so casually at 23 D.

The ὕλη, then, of the world-process is in the *Philebus* made to consist of sensible qualities, with a slight but unmistakeable reference to a ἔδρα, in which the qualities reside, and which is the inevitable condition of the γένεσις of the *μικτά*. In fact, there would seem to be here a distinct use of the two functions of ὕλη which are mentioned at *Politicus* 288 D (ἐξ ὧν καὶ ἐν οἷς δημιουργοῦσιν αἱ τέχναι).

¹ 25 c.

We now come to the class of *πέρας*, and here a difficulty awaits us, although it would at first sight seem quite easy to identify it with *τὸ μέτριον* of the *Politicus*. Here, as elsewhere in the dialogue, Plato does not seem to have one clear conception in mind throughout. The class as a whole is styled *τὸ πέρας*, or the limit. But as early as 24 c we hear of two sorts of *πέρας*, called respectively *τὸ ποσόν* and *τὸ μέτριον*, the very names of which indicate a difference in kind. Our knowledge of the *Politicus* naturally makes us think of *τὸ μέτριον* as an ideal standard, dependent indeed upon mathematical determinations, but only in the sense that a law is dependent upon the material in which it finds expression. That the same signification attaches to it here would seem to follow from its equation with *τὸ καίριον* and *ἡ ἀέδιος φύσις* at 66 A. As for *ποσόν*, it would appear to signify quantity, or magnitude, and nothing further.

This distinction within *τὸ πέρας* is immediately borne out by the special mention¹ of *τὸ πέρας ἔχον*, that which contains or possesses limit, and *ἡ τοῦ πέρατος γέννα*², the offspring of limit, which are evidently identical with each other and with *τὸ ποσόν*. The examples which Plato cites, *τὸ ἴσον*, *τὸ διπλάσιον*, *καὶ πᾶν ὃ τί περ ἂν πρὸς ἀριθμὸν ἀριθμὸς ἢ μέτρον ἢ πρὸς μέτρον*, are all mathematical determinations, just the relations that are essential to the expression of a mathematical proportion or law, such as the *μέτριον* of the *Politicus* was found to be.

We cannot, therefore, go far wrong in dividing *τὸ πέρας* into two classes, *τὸ μέτριον* and *τὸ ποσόν*, the first

¹ 24 A.

² 25 D.

representing the ideal law which governs the production of μικτά, the second the mathematical magnitudes and relations through which it works. This conclusion finds special confirmation in the language of a succeeding passage, for at 26 D the whole process of μίξις is described as a "generation into existence out of numerical relations established with the agency of limit" (γένεσις εἰς οὐσίαν ἐκ τῶν μετὰ τοῦ πέρατος ἀπειργασμένων μέτρων). The μέτριον of the artist, then, is parallel to the μέτριον that governs the γένεσις of the universe, and which is an immaterial law, finding best expression in a later sentence of the dialogue¹: κόσμος τις ἀσώματος ἄρξων καλῶς ἐμψύχου σώματος; and the ὄργανα συναίτια are surely nothing else than the ποσά, the πέρατος γένηα, which are the indispensable instruments through which the μέτριον operates.

The class of μικτὰ should not detain us long, for they are a multitude in number², and the most easily identified of all. They cover the whole realm of concrete existence, and include every discoverable species of the natural world. Unfortunately, however, Plato has here signally failed in clearness of thought and language, and at this juncture of the argument he seems to be governed entirely by the practical considerations of the dialogue, leaving out of sight the metaphysical principle on which the division is primarily based. Since the μικτὸς βίος, upon which the whole argument bears, is not a natural μικτόν, but an imaginary conception, it is only μικτὰ of this kind that he chooses to cite as examples, things which are μικτά, not in a metaphysical, but in a figurative, sense. Acting thus on

¹ 64 B.² 26 c.

the popular belief that all evil is *ἄπειρον*, all good *πεπερασμένον*, he mentions *ὑγεία*, *κάλλος* and *ἰσχύς* as typical members of the mixed class; whereas the whole trend of the argument is to show that these words signify, not *μικτὰ* themselves, but attributes which attach to them when they are faithful copies of *τὸ μέτριον*. They are the scientific terms applied by the mind in its capacity of critic, and are therefore to be classed with *νοῦς* as a part of its machinery. As for *μουσική*, it is obviously out of place among the *μικτὰ* here. *Μουσική* is a constructive art, and it is constructive art that supplies the analogy upon which this whole classification of the physical universe is based; nothing could be more unreasonable than to introduce a simile as part of its application. We are satisfied, therefore, that *μικτά*, in strictness, represent natural substances and nothing more.

With regard to the *αἰτία*, which corresponds to the *δημιουργὸς* of the arts, we are told in indisputable language¹ that it is *νοῦς* and nothing else. But what aspect of *νοῦς*? At this crisis of the argument Socrates declares in most impressive language that the universe, so far from being ruled by blind force, is controlled by a universal *νοῦς* and *σοφία*, and that this universal *νοῦς* is the source of our inferior intelligences, just as surely as our bodies are derived from its body. Clearly then the cause of the universe is inseparably connected with the universal *νοῦς*, but not, I may remark, with the universal *νοῦς* regarded as separate from the universe; the *νοῦς* of 30 A seq. is not only present in all things, but is distributed especially into the finite

¹ *Phil.* 30 c.

souls of men. The *ἀνθρώπινος νοῦς* is bound up with the universal *νοῦς*, and shares with it the function of *αἰτία*, just as in the *Sophist*¹ divine and human *νοῦς* alike are centres of activity.

In other passages, of course, where the *αἰτία τῆς μίξεως* is not in question, we find the divine *νοῦς* regarded as something apart from the universe, as pure intellectual activity², that which represents the most divine life of all. But this *ἀληθινὸς καὶ θεῖος νοῦς* suffers neither pleasure nor pain, and is liable to none of those affections which limit the capacities of men. Its entire separation from the influences of body raises it above all participation in the physical universe. The divine reason in this aspect, therefore, cannot be the universal *νοῦς* distributing itself into finite intelligences, nor can it be regarded as mingling *ἄπειρα* (subjective phenomena) with *ποσά* (mathematical relations peculiar to the human intellect) in order to produce material things. The *θεῖος νοῦς*, considered as pure intellect in continual activity, is single and separate; but, in its character of *αἰτία τῆς μίξεως*, it must be regarded as multiform, and as acting through the subordinate intelligences of which it is the source.

Our analysis of Plato's four *γένη* thus results in a view of the universe, and of the material things of which it is composed, as a generation and as a mixture of certain ingredients brought about by a definite agent. Material things are compounds of sensible qualities and mathematical determinations, fused together by the universal *νοῦς*, regarded as acting plurally through the inferior minds into which it is subdivided, and

¹ *Soph.* 248 E.

² 22 c.

as copying an immaterial ideal law which expresses itself in the mathematical relations aforesaid. Here truly is an explanation of phenomenal existence which in subtlety and power far transcends the older theory, in which we were told, indeed, of an infinite world of ideas, but which threw no light whatever on the function or *modus operandi* of those ideas.

Some doubt has existed as to whether the doctrine of the *Philebus* admits of ideas at all, and the four *γένη* have been regarded as a by-product of Plato's thought. A careful consideration of the class of *πέρας*, however, combined with the knowledge that the imperative necessity of revising the ideal theory¹ was in Plato's mind as he wrote, leads us to the conclusion that in the *πέρας* he had at last arrived at a conception of the ideas which his critics were powerless to assail. To this it has been frequently objected that the difficulty of 15 B, viz., that the idea exists both apart from, and immanent in, particulars, is not thereby removed. Such an objection, however, does not appear to take account of the division of *τὸ πέρας* into *τὸ μέτριον* and *τὸ ποσόν*, of which *τὸ μέτριον* alone represents the idea, *τὸ ποσόν* the instrument of its operation. Transcendence and immanence are still its characteristics, but the new explanation of its nature practically reconciles the two. The law of proportion which governs the production of a *μικτόν* is certainly something other than the *μικτόν* itself, removed from it as far as the ideal is removed from the material, but it is also in a sense immanent in the *μικτόν*, since it gives to the latter its characteristics, and is itself

¹ 15 B.

illustrated therein in virtue of its representatives, the *ποσά*. Such then is the character of the idea as portrayed in the *Philebus*; it is a law of mathematical proportion which governs the generation of phenomenal things, that is, not *merely* a scientific generalisation attained through observation and experiment, but rather an eternal necessity inherent in the very nature of a thing and expressing its peculiar reality. Further light on this notion, however, must be reserved till we come to the examination of the *Timaeus*.

An important question remains. Of what things are there ideas of this sort, and where is the line to be drawn? To this the exposition of the *γέννη* seems to provide a clear answer. There are ideas of all *μικτά*, and the *μικτὰ* of the material universe are surely every species of natural substance, whether animate or inanimate, organic or inorganic. The mere fact that sensible qualities, mathematical relations, mind and all its activities in art and science, are to be found *outside* the class of *μέτριον* serves to rule them out of the list of ideas; and of these the first two classes were already, in the *Theaetetus*, *Parmenides*, and *Sophist*, banished from the realm of the ideas.

A few words should be said in regard to two classes of existences which are not included in those mentioned above. The first of these, *σκευαστά*, of which, like everything else, there were ideas¹ in the time of the *Republic*, seems since then to have declined in importance. In the critique of the *Parmenides*² Socrates apparently does not think it worth while even to mention them, and the same applies to *Philebus* 15 A. They have, it

¹ See *Crat.* 389 A.

² *Parm.* 130 c.

is true, served a purpose, and no slight one, in affording a striking analogy, which Plato has used with effect in both the *Philebus* and the *Timaeus*, for the elucidation of the ideal doctrine. It is, however, quite incredible that Plato should have included them in the μικτὰ of the universe, which are subject to the μέτριον imposed by universal νοῦς. If they are to be placed in the γένη at all, it must be as an appendage to the class of νοῦς, which, as we gather from 66 B, includes ἐπιστήμαι and τέχναι of all sorts, and, presumably, their products also.

The other class of existences referred to, that of τὸ ὑγμεινόν, τὸ ἀγαθόν, τὸ καλόν, etc., is of far greater importance, and certainly of greater philosophical significance, since they have served as typical examples of ideal reality from the time of the *Symposium* onwards¹. They are not, however, natural μικτά, and, consequently, it is impossible, from the point of view of the *Philebus*, to attribute to them a μέτριον in the same sense in which it applies to the others. In order to determine their essential nature, we must examine for a moment the conception of Good as revealed at the close of the dialogue. At 64 A there is thrown out a hint to the effect that by an analysis of a special μικτόν, viz., the μικτὸς βίος, we may hope to learn τί ποτε ἔν τε ἀνθρώπῳ καὶ τῷ παντὶ πέφυκεν ἀγαθὸν καὶ τίνα ἰδέαν αὐτὴν εἶναί ποτε μαντευτέον. Then follow immediately the three criteria by which a thing is judged to be good or the reverse. These criteria, in contradistinction to the popular requirements of τέλειον, ἰκανόν, αἰρετόν, have a metaphysical bearing, and are, first of all,

¹ Cf. *Theat.* 175 c; *Phil.* 15 A; 62 A.

ἀλήθεια, secondly, μετρίότης, and thirdly, συμμετρία. Now it is obvious from the confused arrangement of the passage that these three notions are employed loosely, and that they are in reality closely akin to one another, being different aspects of the same thing. Ἀλήθεια, in Plato's strict usage, always implies correspondence with an ideal reality, and that this is its application here seems to follow from the fact that the principle of valuation is no longer popular, but metaphysical. Μετρίότης, if we are to keep to the new sense of μέτριον established in the *Politicus* and the *Philebus*, will mean the quality of being μέτριον, or of conforming to τὸ μέτριον, i.e., the ideal standard; whereas συμμετρία, the condition of a whole when its parts are duly proportioned, will represent the material aspect of μετρίότης¹, since it is conformity with the μέτριον that makes the particular ingredients perceptibly symmetrical. It is, accordingly, clear that there is in reality only one criterion of the good. The most general term for it is ἀλήθεια, which signifies approximation to the ideal. The expression most characteristic of the *Philebus* is μετρίότης, since it implies the special interpretation of the ideal which the *Philebus* presents. Finally, μετρίότης reveals itself in the concrete particular as συμμετρία, or harmonious relation of parts, and is, in this aspect, the cause of κάλλος. The test of goodness, then, in the material universe at least, is approximation to the μέτριον, and this test, says Plato, holds *whatever* be the μικτόν under consideration. Hence τὸ ἀγαθόν and τὸ κάλλος, when applied to the μικτὰ of the universe, are no longer suprasensual realities; they are rather part of the machinery of a

¹ See 25 E.

particular science, a science of *μετρητική*, whose function it is to compare things, not with one another, but with the absolute *μέτριον* which is the law of their existence. In the *Politicus* we became acquainted with a science of art-criticism, which looked upon all divergence from the standard as an evil, which must in all cases be avoided; and now we find that there is a still higher *μετρητική*, a science of ideal aesthetics, whose business it is to judge the *γινόμενα* of the world in the light of the absolute idea. But the Good and the Beautiful are not ideas, which inhere in *μικτά*, and thereby make them materially good and beautiful; they are simply terms of relation, a part of the machinery which every art must have, and they are to be ranked, not with the ideas, but with the *τέχναι*, which are an appendage to *νοῦς*. In the region of ethics, indeed, we have yet to show that Plato was to the end faithful to his belief in a supreme *αὐτὸ ἀγαθόν* or its equivalent: in the *Timaeus* we are presented with his final standard of moral goodness. But, in everything that concerns the physical excellence of *γινόμενα*, he is now content to point to the *μέτριον* of each thing as the supreme test of its value.

We have, therefore, in succession excluded from the ideal world sensible qualities, relations, objects of *ἐπιστήμαι* and *τέχναι*, *σκευαστά*, and also the terms good and beautiful and their opposites; and the word *εἶδος* or *ιδέα* is henceforward to be applied especially to the organic types of nature, and all species of natural substances.

But what steps must be taken in order to discover these *μέτρια*? If Plato means them to take the place of the old *ιδέαι* as objects of knowledge, how are they

to become known to us? Surely in the way which Plato himself has indicated. At a very early stage¹ of the dialogue Socrates brings up the eternal question of the One and the Many, and Protarchus, with youthful ardour, is anxious to attack it then and there in its most subtle form, viz., in its application to the theory of ideas. The only way, says Socrates, to unravel the mystery of the One and the Many in any form is to make use of the old method of *διαίρεσις*, which he had employed many a time in his search for truth, in the region of politics and ethics no less than in metaphysics. Limit and unlimitedness are present everywhere, not only in the physical universe, but in the realm of knowledge too: the very method of definition is founded on a recognition of the two principles. Whatever then it be that we seek to know, let us posit one genus for it, and then in the light of this genus resolve the indefinity of the individual representatives into a definite number of species, among which the object of our search will be found. The true nature of *μέτριά* is accordingly to be discovered by the use of this supremely efficient instrument; careful analysis of the indefinity of particulars will reveal the nature of the species, as well as of the genus. The *μέτριον* of either is the eternal law of proportion which governs it, and it cannot but reveal itself to him who makes search with diligence. Of so much we are for the present assured: but for a comprehensive view of the whole scheme of knowledge and of its detailed dependence upon the theory of ideal Being, we must look to the *Timaeus*, which now awaits our consideration.

¹ 14 c seq.

ESSAY III.

THE WORLD-PROCESS OF THE *TIMAEUS*.

IN our consideration of the *Philebus* we were called upon to regard the world as the result of a process or generation analogous to that which is concerned with production in the arts. The universe, we were told, is a *γιννόμενον*, a product brought into being by the agency of *νοῦς*, which combines sensible qualities with mathematical relations, and makes them conform to certain *μέτριά*, or eternal laws of formation. In the myth of the *Timaeus* we find this doctrine not merely reiterated, but extended and developed in the greatest detail, and with a far more elaborate use of the symbolism with which we are already acquainted. The whole cosmos, with all its various interrelated parts, in all its activities both great and small, is spread out before us in one of the most magnificent allegories that the world has ever seen. Abstract conceptions, which in the *Sophist* were presented to us in logical simplicity, are here displayed in the picturesque dress of personification; the universe is represented as being constructed after a material fashion out of the immaterial elements into which Plato has analysed it in thought. Our present object is to make a general estimate of the purport of the myth, reserving for separate treatment

its bearing upon Plato's final statement regarding the nature of knowledge.

A brief *résumé* of the story till the end of c. xvi¹, which marks a definite break in the exposition, is the first essential. First of all, says Plato, it behoves us to draw a distinction between that which is and that which becomes, between τὸ ὄν αἰεί, γένεσιν δ' οὐκ ἔχον, and τὸ γιγνόμενον μὲν αἰεί, ὃν δὲ οὐδέποτε: the first is apprehended by reason alone, the second is the object of opinion and irrational sensation. To which of these does the universe belong? Surely, since it is visible and tangible, and generally apprehensible by δόξα and αἴσθησις, to that which is γιγνόμενον and not ὄν. But the peculiarity of the phenomenal is that it always has an αἰτία, hence one must be found for the universe. Moreover, a thing can only be fair when the δημιουργὸς who fashions it takes the ideal as his model; that the universe is fair no one can dispute; it is κάλλιστος τῶν γεγονότων. Therefore, whatever be its cause, the ideal must be the model upon which it is built.

Now, in order that the universe might be καλόν, its αἰτία, or, to adopt the language of "production," artificer produced in it harmony and measure, and also, seeing that of sensible things that which possesses νοῦς is always superior to that which has it not, he placed νοῦς in ψυχὴ and ψυχὴ in σῶμα, since apart from ψυχὴ νοῦς cannot inhere in anything. As for the παράδειγμα, in imitation of which the world was fashioned, it is a ζῶον, the all-embracing νοητὸν ζῶον, containing in itself all other νοητὰ ζῶα, τὸ κάλλιστον τῶν νοουμένων.

¹ *Tim.* 47 E.

As for the *σῶμα* of the cosmos, it is composed of the whole sum of fire, air, earth and water. These four ingredients are essential, since, although two only, fire and earth, are requisite for visibility and tangibility, two others must be added as means in order to make the resultant body a perfect unity. This body is a perfect whole made up of perfect parts; and, seeing that it includes within itself all animals, it possesses that shape which comprehends all other shapes, viz., the spherical. It has no need of organs, but revolves upon its own axis in a uniform circular motion, the motion most typical of the action of *νοῦς* and *φρόνησις*.

But, although we have spoken of *ψυχὴ* as being placed within body, we do not therefore imply that *σῶμα* is older or of greater importance than *ψυχὴ* which inheres in it. The truth is rather to be expressed in this way: *ψυχὴ* rules over *σῶμα*, and penetrates it through and through. It is composed of three ingredients; the *ἀμέριστος* and *ἀεὶ κατὰ ταῦτὰ ἔχουσα οὐσία*, and that which, being divided in material bodies, is *γιννόμενον*, *ὃν δὲ οὐδέποτε*, are mingled with a third form of *οὐσία* which is, like them, compounded of *ταὐτόν* and *θάτερον*¹. These three forms of *οὐσία* the artificer welded together into a unity, hard though it was to mingle *θάτερον* with *ταὐτόν*. Further, he divided the mixture thus formed into portions corresponding to the intervals of the diatonic scale; after which, the whole of soul being divided into two halves,

¹ This rendering of the sentence beginning *τῆς ἀμερίστου* (35 A) has the authority, among ancient commentators, of Proclus and Plutarch (*περὶ τῆς ἐν Τιμαίῳ ψυχογονίας*, c. 25).

he laid them across one another in the shape of the letter X, and formed of them two intersecting circles. The one of these, which revolved to the right by way of the side, he called the circle of *ταυτόν*, that which revolved to the left diagonally, the circle of *θάτερον*. To the circle of *ταυτόν* he not only gave supremacy over the circle of *θάτερον*, but he left it single and undivided, whereas the circle of *θάτερον* was cleft into seven concentric circles corresponding to the orbits of the seven planets.

Next, in order to make the *κόσμος* resemble still more its eternal *παράδειγμα*, he produced within it an everlasting image of eternity, which has been named time, and for the measurement of which he fashioned the planets which revolve in the seven orbits of *θάτερον*. All these, together with the fixed stars, are living deities, spherical in shape, composed chiefly of fire, but whereas the fixed stars follow the motion of the Same only, which is most like to the activity of reason, the planets are endowed with the motions of Same and Other both.

The universe, however, was not yet complete, for as many varieties of *ἰδέαι* as *νοῦς* beholds in the *αὐτὸ ζῶον*, so many the artificer thought should be contained in the *όρατὸν ζῶον*; and of these there are, besides the *θεῖον γένος* of stars, three inferior classes, viz., the tribes which inhabit the air, the water, and the earth. With a view to the making of these, he called together the race of heavenly stars, and, addressing them as *θεοὶ θεῶν*, showed how *τὸ πᾶν* could not be truly *πᾶν* until there were placed within it the inferior animals also; yet he himself could not make these, for they would

thus become the equal of the deities themselves, whose bodies had been rendered indissoluble by his own will. Consequently to the stars he assigned the duty of moulding for the νοητὰ ζῶα such bodies as were appropriate for them, as well as the task of providing them with sustenance, and of receiving them again at death. But, before he committed to the deities the immortal principle of the ζῶα, he took such portion of the three ingredients as was left over from the former mixture, and, having compounded it in less perfect proportions, he divided the whole into individual souls equal in number to the fixed stars. These souls, being placed each in one of the stars as in a chariot, were then shown the nature of the universe and its inevitable laws: how that they should each be planted in one of the planets, and that it was given to them to choose how they would live; if they lived in righteousness, they should hereafter return to their kindred star and be happy, but if otherwise, they must pass in graduated stages first into the form of a woman, and thereafter into the forms of beasts in due order, according to their manner of life. Then the planetary gods, obeying the command of their father, made mortal bodies of the four elements they found in the universe, and these bodies they made so far as possible in the image of the cosmic and starry bodies, placing the circles of ταῦτόν and θάτερον within the spherical body called the head. At birth the soul of the creatures thus made was overcome with disorder and tumult, owing to the disturbances caused by the influx of nourishment and the impact of external sensations. The circle of the Same was impeded and the circle of the Other

distorted, so that neither Reason nor Sensation functioned correctly. In time, however, the commotion abated and the motions of the Same and Other resumed their proper course ; then might such a soul, if it used its opportunities aright, attain to the excellence of knowledge and intellectual liberty.

All the rest of the body, hands, feet, and sense-organs, were given merely to minister to the comfort of the head, which was its divinest part. Sight and hearing, and all our senses, were bestowed for this one purpose, that, through observing the orbits of heavenly beings, we might be enabled to order aright the revolution of reason in our own souls, and pursue divine philosophy, the greatest gift of God to men.

So much will suffice for an examination of the main principles of the myth ; the detailed physical exposition that follows may well claim our attention in a separate paper. First of all a word or two must be said as to the claims of this story to be considered as an allegory at all. Such a view of it is assuredly no novelty, for it apparently prevailed in the Platonic school from the time of Aristotle onwards. The latter refers distinctly to such an interpretation in *de Caelo*¹ ; Plutarch, too, though maintaining a literal interpretation himself², is obviously conscious that the opposite view was the favourite among his contemporaries. Aristotle, in *de Caelo*, pours contempt upon those who compare the simile of creation in time to a diagram, in explanation of which tense-forms are used, not to indicate time-relation, but merely with a view to clearness in expo-

¹ Ar. *de Caelo* i. 10.

² Plutarch, *περὶ τῆς ἐν Τιμαίῳ ψυχογονίας*.

sition. The cases, he says, are not parallel, for all the separate parts of a diagram can co-exist, whereas *ἀταξία* and *τάξις*, which in the *Timaeus* are made to follow one another, can never co-exist. Simplicius¹, however, replied that the *ἀταξία* represents, not a separate force, but an ever-present tendency which makes itself felt even in the midst of *τάξις*. There is, in fact, nothing in the *Timaeus* myth that can be regarded as existing in separation from anything else; all the solitary forces there at work are abstractions, separated by sheer reason from the environment of which they are a vital part, and without which they themselves could not exist.

A literal interpretation, indeed, would raise endless difficulties; the whole phraseology and arrangement seem to militate against it. We are met from the beginning with conceptions such as *οὐσία*, *ταὐτόν*, *θάτερον*, which take us right back to the logical analysis of the *Sophist*, and which we cannot possibly regard as material things. Again, the story never proceeds uninterruptedly to a conclusion. Instead of a narrator who sees clearly before his mind's eye a definite series of events, we have here, as it were, a photographer, who is continually presenting us with the same scene taken from different points of view. Thus, in the beginning², the body of the universe is presumably fashioned out of the four elements, whose existence is pre-supposed; later at 53 B, however, these elements themselves are represented as being shaped by the *θεὸς εἶδεσί τε καὶ ἀριθμοῖς*. Could this possibly be part of a story which depends on time-sequence for its intelligibility? Similar instances are

¹ Simplicius, commentary on this passage.

² 31 B.

to be found at 29 A and 30 A, where τὸ γεγονὸς and τὸ ὁρατὸν are introduced before any γένεσις has taken place, and at 34 B and C, where we are told in almost the same breath that ψυχὴ is created within body (as if body were prior), and also that σῶμα is in no sense to be counted prior to ψυχή. Plato here, in fact, tells us plainly that he does not intend his words to be taken literally. Finally, of course, there is the insuperable difficulty, emphasised by Proclus, of explaining how time can be conceived of as being created as one of a series of creations all of which take place in time.

We may, then, I think, take it for granted that the myth of the *Timaeus* does not profess to describe any actual γένεσις of the world in time; and we shall be content to interpret γένεσις in the same sense as Plato himself, at 28 B, C, interprets it: that is, τὸ πᾶν is to be regarded as a γιγνόμενον, not because it has in any sense been produced at any special period, but because it belongs to the class of things, which, being objects of δόξα and αἴσθησις, are ever in flux and opposed to that which is truly ὄν. In this sense only Plato affirms that ὁ οὐρανὸς γέγονεν, and the problem he sets before himself in the *Timaeus* is two-fold: first, who or what is the αἰτία of this continual γένεσις, and secondly, what is the παράδειγμα in imitation of which it is framed, what is the eternal reality in virtue of which alone it retains such existence as it has? Our present object, then, will be to elicit from the poetical phraseology of the myth the result of Plato's deliberations on these two points.

In the beginning of his exposition Plato told us

that it would be hard to describe the *αἰτία* of the universe in any hard and fast language. He was content for the present simply to assume its existence and to call it the *δημιουργός*, the creator of all visible things. As the story proceeds, however, it is clear that the *αἰτία* may be regarded in two lights: it may be, first of all, the cause of motion, or of the actual *γένεσις* of phenomena, and, secondly, the final cause, the ideal "good" which is the end and aim of this *γένεσις*. The former aspect is unfolded in those passages¹ which represent the *δημιουργός* as the actual cause of becoming, and the communicator of motion to the bodily universe. The *αἰτία* as final cause is depicted chiefly in the descriptions² of the *γένεσις* of soul, where the *δημιουργός* is actuated by a beneficent purpose, and is practically identical with the idea of good, and especially at 41 A, where he supplies the soul-principle for the inferior animals, but declines to have any share in the creation of their bodies, or of the evil which they must necessarily encounter. The *αἰτία* here is obviously no movent cause, but, to quote Plato's own words, *τῶν νοητῶν αἰέ τε ὄντων ἄριστον*, the highest of ideal existences. He is *νοήσει μετὰ λόγου περιληπτὸν*³ and *μετὰ νοῦ καταφανές*. He is, in short, to be identified with the supreme *παράδειγμα* itself.

In his character as the originator of motion the *δημιουργός* of the *Timaeus* would appear to be scarcely different from the *ψυχὴ τοῦ κόσμου*, which is consistently represented as having the cause of motion in herself (36 E), and as being the primary cause of motion in all other things (46 E). Plato is still true to his belief of

¹ 28 C; 34 A.² 29 E; 37 A.³ 28 A.

the *Phaedo*, and more elaborate declaration in the *Philebus*, that a divine νοῦς, an all-governing reason, is the cause of all that is phenomenal. In words that remind one most strongly of the *Phaedo* he affirms that there are two kinds of causes, primary and secondary, and whereas the latter embraces all manner of physical processes, which most men regard as true causes, the former sort is invisible, the direct activity of mind and soul; and he that loves reason and knowledge must seek the rational cause first, and the secondary causes which transmit, but do not create motion, only for the sake of the primary. We understand, therefore, that mind and soul are the cause of the activity of the universe no less than of human action and production; we must postulate a universal mind and soul to govern the infinite movement of the world. Everything that Plato regards as necessary for the completion of the universe is summed up at 47 E as τὰ διὰ νοῦ δεδημιουργημένα.

This view not only endorses the statement of the *Philebus* already referred to, but is re-affirmed by the well-known passage in the *Laws*, in which ψυχὴ¹, the αὐτοκίνητος, is represented as the source of all the γένεσις of the world. It has in itself the power of moving, not only itself, but other things as well; all its primary motions of βούλησις, βούλευσις, δόξα, and the like, are reflected in the corporeal movements to which they give rise. In the θεῖον γένος of the stars ψυχὴ as ἀρχὴ κινήσεως is seen in its greatest perfection, for in them νοῦς is least subject to the seductions of sense, and their physical motions betoken the supreme regu-

¹ *Laws* 896 D, E. Cf. *Phaedrus* 245 C.

larity and precision of the soul-movements which they reflect.

There remains the larger question of the αἰτία as the final cause of the universe. Having satisfied ourselves that the movent cause is to be found in a universal ψυχή, we have still to seek its παράδειγμα, the idea or end for which it came into being. But before we undertake this new quest, it would be as well to have in mind the main features of this universe as Plato has sketched it¹. It is a single, all-comprehensive animal, possessed of νοῦς and ψυχή as well as body, and containing all visible creatures that exist. Its body comprehends all fire, air, water and earth², so that nothing is left behind with which another σῶμα might be formed. It is ὅλον ἐξ ὅλων ἀπάντων, possessing no organs of sense, and therefore destitute of sensations except in so far as it may be said to have them through its various parts. Its shape is spherical, for the animal that contains within itself all possible animals should surely have that form which may be filled with all possible shapes, and its only motion is a revolution upon its own axis—that physical motion which approaches nearest to the pure activity of mind³.

As regards its soul, one cannot be far wrong in ascribing to it, though in purer and more perfect proportions, a structure similar to that which one perceives in the ψυχαὶ of individual men. Ψυχή is a compound, formed of the οὐσία which is ἀμέριστος and ever changeless, and the οὐσία which is γιγνόμενον and divided in visible bodies, mingled with a third ingredient, Essence, which, like them, is a mixture of two

¹ 30 B.² 32 D seq.³ Cf. *Laws* 898 A.

things, *ταὐτὸν* and *θάτερον*, and which, together with these last, corresponds to one of the leading categories of the *Sophist*, which are employed by the human mind whenever she passes judgment on, or attains to knowledge of, anything whatsoever. A question arises here as to Plato's exact meaning in saying that *ψυχή* is a compound of this sort, and that the changeless and changing world, together with Essence, are composed of these two ingredients, *ταὐτὸν* and *θάτερον*. The answer is surely to be found at 37 A, B. There we find it clearly stated that *ψυχή*, whenever she comes in contact with anything, whether it belongs to the class of the *ἀμέριστον*, or that of the *μεριστόν*, being affected in her entire substance, tells that wherewith the thing is same, and that wherefrom it is different. Hence we understand that the function of *ψυχή*, whether it be that of cosmos or individual, is to declare the relation of Same and Other in regard to everything that comes under her operation, whether it belong to the permanent and intelligible sphere, or that of the sensible and ever-changing. *Ψυχή* thus has the intelligible and sensible as ingredients because she deals with both alike, and these are mingled with Essence, i.e., with Same and Other, inasmuch as these last are the leading predicates which she necessarily employs in all her functioning. The whole realm of ideas, moreover, and the sensible world of flux likewise, are composed of Same and Other, inasmuch as the mind is eternally decomposing them, different though they be in kind, into these same two elements. In fact, all existent things, so far as they are known, may be said to consist of these ingredients.

This doctrine is not one that need surprise us here ;

it was stated before in a less explicit form in the *Sophist*¹. There, it will be remembered, the knowing subject is said to have *κοινωνία* with τὸ γιγνόμενον by means of *αἴσθησις*, and with τὸ ὄντως ὄν by means of *ψυχή*, διὰ λογισμοῦ; here we have the theory of *ψυχή* as a compound of the intelligible and the sensible. Also the categories *οὐσία*, *ταυτόν*, *θάτερον* and the like, are found to have *κοινωνία* with one another in virtue of their inherence in the same thing when analysed by the same mind. Putting these two statements together, we arrive at the doctrine of the *Timaeus*. The knowing subject, or, to borrow the language of the *Timaeus*, the soul, in virtue of her *κοινωνία* with the objects both of *ἐπιστήμη* and *αἴσθησις*, imparts to both the attributes Same, Other and the like, which are the universal predicates indispensable to her activity, so that they may be said to consist of these attributes. Hence the categories too, being found in the same objects, have *κοινωνία* with one another; and—a fact which is more important in the light of one of the *ἀπορίαι* of the *Parmenides*—the ideal world itself, consisting, in virtue of the *κοινωνία* of *ψυχή*, of *ταυτόν*, *θάτερον* and the rest, is capable of receiving contrary attributes no less than the phenomenal: this, however, is no longer due to the *κοινωνία* of incompatible ideal entities, but to the necessary functioning of the mind, which, by participating in its object, makes the object participate in all manner of contradictory categories. Ideal and material worlds, then, so far as they are *known*, may be said to consist of Same and Other.

¹ *Sophist* 248 A.

But *ψυχή*, besides possessing Same and Other, and thereby Essence, as primary ingredients of her nature, has in addition the two motions, Same and Other, which apply respectively to the faculties of reason and sensation, inasmuch as reason is concerned with that which is *κατὰ ταῦτ' ἔχον*, sensation with that which is continually *θάτερον, γιγνόμενον καὶ ἀπολλύμενον* (28 A). They are made to revolve after the fashion of the spheres of the fixed stars and planets, simply because Plato regards all physical motions as the counterpart of the noetic activity of *νοῦς*. Each of these circles, further, consists itself of Same and Other, for they are the essential modes of all activities of soul. Here we are in a position to realise even more perfectly why Plato should from the outset make the *ἀμέριστον*, which is *νοητόν*, and the *μεριστόν*, which is the object of sensation, ingredients in the formation of soul; soul partakes of the nature of both of these in virtue of her apprehension of both. One is reminded of the definition of *οὐσία* which was introduced in the *Sophist* to satisfy Idealists and Materialists at once—*ἡ δύναμις τοῦ ποιεῖν ἢ πάσχειν*. Applied by the idealists, this definition included both *οὐσία* and *ψυχή*; applied by the materialists, it included both *τὸ αἰσθητόν* and *τὸ αἰσθανόμενον*. Hence *ψυχή*, in any case, was to be counted *οὐσία*, inasmuch as it operated in both spheres. Plato, therefore, is still maintaining his compromise between materialism and idealism. Aware of the merits on both sides, he will not reject either utterly, and his conception of soul as the comprehensive essence, through which ideas and phenomena alike are apprehended, and as the eternal cause to which phenomena

owe their being, preserves the sovereignty of the ideal world, while accounting for the apparent reality of material things.

Besides functioning as reason and sensation and operating through Same and Other, the soul is represented as being composed of mathematical ratios, corresponding to the intervals of the diatonic scale. This of course signifies simply that the apprehension of harmony, too, is one of the striking modes of its operation. Soul, then, is not itself a harmony, as Simmias tried to hold in the *Phaedo*, but it has within it the power of grasping and understanding musical relations in virtue of number and proportion, which are indispensable modes of its activity.

In his account of $\psi\upsilon\chi\eta$ Plato has been enabled to lay down certain definite principles and to come to some definite conclusions. Concerning the body of the cosmos and its component parts, however, he cannot attain to certitude in any degree. It is ordained that everything which is visible shall be in eternal flux; consequently everything that goes to make up the material universe is subject to incessant variation of form. Not only do organisms suffer daily change within themselves, but they themselves in their entirety are forever passing away and being replaced by others, with the exception indeed of the stars, the heavenly bodies, who stand highest in the realm of creation, and in a peculiar way represent the universe itself, for they are its leading constituents, and from them is derived the substance of the smaller constituents. This, I think, is all that is meant by the creation by the $\theta\epsilon\omicron\iota$ $\theta\epsilon\omega\nu$ of mortal bodies. The individual souls of

men, animals, and all lower existences, receive their bodily form from the planets, who are the firstborn of the *θεός*, or rather, the highest phenomenal existences in the universe. The fixed stars have already been called into requisition to act as the *ὀχήματα* of the souls while they listen to the Artificer's harangue regarding the laws of the universe; and just as this detail has a metaphorical significance merely, so the creative function of the planets means simply that all lower creatures derive their substance from the heavenly bodies. Plato's language seems to me to admit of no other interpretation. The *δημιουργός* himself is the cause of the creation and differentiation of the souls; what the *θεοὶ* do is simply to provide material for the bodies, to nourish the bodies when made, and to receive them again at death. Nothing can be gained by attempting to extract an unnecessary complexity in Plato's metaphysics from the picturesque scene in which the *δημιουργός*, calling together the *θεοὶ θεῶν*, entrusts to them the making of the bodies of inferior creatures. But, to resume our account of the flux, part of the law of change is that the inferior souls, which are parts of the great soul, take upon them the nature of man, and thereafter that of woman and the lower animals, according to the merit or demerit of their successive lives. The possession of body and sensation is an unceasing source of temptation, and when a man is mastered by the lower impulses of his soul, it is ordained that his soul shall pass first into the body of a woman, and, if even then he fails to repent of the error of his way, into the form of some beast suited to his particular nature. Only through following the

dictates of reason can he hope to escape, and rising beyond the trammels of the body, return to his first and best estate (πρὶν τῇ ταύτοῦ καὶ ὁμοίου περιόδῳ τῇ ἐν αὐτῷ ξυνεπισπόμενος τὸν πολὺν ὄχλον καὶ ὕστερον προσφύντα ἐκ πυρὸς καὶ ὕδατος καὶ ἀέρος καὶ γῆς, θορυβώδη καὶ ἄλογον ὄντα, λόγῳ κρατήσας εἰς τὸ τῆς πρώτης καὶ ἀρίστης ἀφίκοιτο εἶδος ἕξεως. 42 D).

We have now reached a point where we may pause to consider the nature of the idea or *παράδειγμα*, which, Plato says, the *δημιουργὸς* had in view in the production of a universe such as we have described. That universe, fair though it be, is not calculated to inspire the philosopher with satisfaction, for it is fated to undergo incessant change, and the inferior souls within it, by reason of their connexion with body, are ever subject to misfortune. The world of sense is unreal (28 A): it is an eternal illusion: it has in it nothing akin to reason or thought (46 D): it only exists in so far as it is seen or handled (31 B). Hence only when a man's soul is free from sin, and thereby casts off the incubus of body, will the illusion of sense cease to have a meaning for him¹; then his reason will work in harmony with that of the All. How then are we to describe the ideal permanency to which the *δημιουργὸς* looked beyond all the flux of sense? It is τὸ τῶν νοουμένων κάλλιστον καὶ κατὰ πάντα τέλειον². But it is before all else a ζῶον, an eternal and perfect animal, which contains within itself all other νοητὰ ζῶα that are. Now a ζῶον, as Plato indicates time and again, is a complex being possessing faculties both bodily and mental; but if a ζῶον is to be νοητὸν merely, if it is to

¹ 42 D.

² 30 D.

be placed in the category of the changeless and eternal, it must assuredly, on Platonic principles, divest itself of everything that is perceptible, of all those attributes which cling to it in virtue of its bodily nature. As a result of this process it becomes not even *ψυχή* (since *ψυχή*, too, in this dialogue, is concerned in part with bodily functions), but *νοῦς* pure and simple. As the Kebes of the *Phaedo* puts it: ὅλῳ καὶ παντὶ ὁμοιότερόν ἐστι ψυχή τῷ αἰὲ ὡσάντως ἔχοντι μᾶλλον ἢ τῷ μή¹.

The supreme *παράδειγμα* of the universe, then, being a *ζῶον* and a *νοητὸν ζῶον*, is *νοῦς*, a perfect universal *νοῦς*; and the ideas of the subordinate creatures are only *μόρια καθ' ἐν καὶ κατὰ γένη* of the *αὐτὸ ὃ ἔστι ζῶον*². At 39 E Plato says: "As many kinds as mind perceives to exist in the *αὐτὸ ζῶον*, so many did the *δημιουργὸς* think fit that the visible world should contain, and of these there are in the main four kinds, first, the heavenly deities, and after them the tribes that inhabit the air, the water, and the earth." This statement translated into ordinary language means that only the animal creation, the various tribes that inhabit the four elements, merit ideal counterparts and a share in the *αὐτὸ ζῶον*, the consummation of all existence. Now this restriction of ideas to the various species of animals carries our thoughts at once to the transmigration theory, and the fact that within all these tribes, from man downwards, there is a constant struggle between higher and lower impulses, with the result that the individual soul is continually being reincarnated in a higher or a lower form. The animals for whom ideas are reserved are exactly those who come

¹ *Phaedo* 79 E.² 30 c.

within the range of transmigration, the tribes of air, earth and sea, each of which, according to Plato, represents the souls of mortal men which have degenerated through the taint of sin. It is true, of course, that the heavenly deities, who are immeasurably removed from human frailty and the need of transmigration alike, are also mentioned; but Plato has so often emphasised their pre-eminence, and their close connexion with the All itself, that one is not surprised to find them at the head of the ideas here. They assuredly will have their counterpart in the ideal sphere, for they of all material things are the most perfect imitators of Reason. The members of the vegetable kingdom, on the other hand, which at first sight would not seem to enter into the scheme of transmigration, have no place in the list of ideas as here given. Plato, however, acknowledged them to be ζῶα of a kind, and he must inevitably in drawing up a complete list of ideas have included them both in his system of transmigration and of ideas. Empedocles, his predecessor in the transmigration-doctrine, not only made plants participate in the process of metempsychosis, but affirmed that he himself had been a θάμνος.

It would appear, therefore, that the scheme of ideas as here propounded has its basis in ethics. The tribes of the air, earth, and sea are assigned a share in the αὐτὸ ζῶον because they are degenerate forms of the immortal principle of soul, which when it is conceived as functioning in perfect purity and unity, like the ἀληθινὸς καὶ θεῖος νοῦς of *Philebus* 22 c, is the ideal ζῶον itself. It is only the body, and the sensations and lusts that attend upon it, that keep the individual

ψυχῇ from functioning in harmony with that of the All; they inflict upon it harder and harder penalties in proportion to its weakness, and prevent the realisation of that ideal universe, an all-embracing mind, working in unison with itself as one whole, perfect and undivided. The beasts of the field, then, the fowls of the air, and the fish of the sea, have each in their kind a share in the ideal ζῶον, for they represent a portion of the universal soul, which is ever constant, though subject to the adverse power of sin: and the eternal prototype of each is simply a specific or generic determination, as the case may be, of the universal νοῦς, which is the supreme idea and παράδειγμα, the ultimate goal of all human endeavour. In other words, Plato here indicates that the ideas, which have for so long been the cardinal principle of his ontology, are in the last analysis special modes of regarding a universal νοῦς, for the realisation of which every soul, albeit unconsciously, strives, the final end and purpose of that everlasting process of which the world-soul is the cause—the world-soul itself conceived in its highest phase and measured by its highest achievement. Thus the idea of star is simply one aspect of the universal νοῦς, which must be considered as providing the type for the soul-activity of the stars, and of every soul throughout the whole range of living genera and species, and also, secondarily and indirectly, as being the cause of everything that is καλόν in the visible world. Even in the *Sophist* Plato repudiated the thought that τὸ παντελὺς ὄν¹ could be devoid of ζωή; and these εἶδη are confined to ζῶα alone. No room for in-

¹ *Sophist* 249 A.

animate objects can possibly be made in the four-fold classification of 40 A without forcing the language beyond measure. The position which Plato assigns to inanimate substances, such as the four elements, and the nature of the ideas of these, will be defined when we come to our examination of the physical portion of the *Timaeus*.

Priority in time in the myth stands, as we have shown above, for priority in ideal importance, and when Plato speaks of a man, after many transmigrations and much conflict with bodily passion, attaining to his first and best nature, we may be sure that the first and best nature is that which is ideally and eternally first, though not in time. Hence the journey by which the soul is freed from bodily hindrance, and learns to function in harmony with the great soul of the universe, is not strictly a "return" in time, but the much-wished-for and well-nigh unrealisable ideal of the philosopher. If every soul were to attain to its first estate, then the supreme idea would be perfectly represented in time, and Plato is not without hope that some souls at least may pass beyond the reach of bodily hindrance and evil¹. The soul of him who is free from bodily ills will be given a place on its kindred star and learn the nature of the universe as it truly is, like the souls of those who, in the *Phaedrus*, viewed the ideas in the supracelestial region. For Plato's *θεός* is not a God, who literally creates, in the beginning, a universe that is altogether fair and good, and souls whom no spot of imperfection has yet touched; it is the eternal idea, for which the whole

¹ 42 c, d; 44 c; 90 d.

creation yearns, and strives through many imperfections to reach, and towards which every achievement of the intellect, every victory gained by soul over body, is an advance.

To sum up the metaphysical significance of the world-process which we have been reviewing, Plato seems, in the first portion of the *Timaeus* to have enunciated in a poetical form the leading features of his latest view of the universe. From the first he felt sure that there was some permanent principle or principles underlying variable phenomena. He has made diligent search for it, and, as his declarations in the *Phaedo*, *Philebus*, and *Sophist* would lead us to expect, he has found it in soul and mind. Reason is the highest and best thing of which the human being has experience, hence to nothing less than reason can he attribute the perfection and ultimate reality of everything he sees. Even physical motion is but the material counterpart of noetic activity; and time, which measures all physical motion and change, is but the image of eternity, throughout which the activity of supreme *νοῦς* endures.

And Reason has two aspects; it is both *αἰτία* and *παράδειγμα*, of which the latter is prior in logical and ideal importance. The source of existence is in its highest phase the source of good, as the teaching of the *Republic* leads us to expect. To the universal soul man owes his very existence, and he must forever seek and emulate it in its divine and ideal form, if he is to gain a happy life. When every soul in the universe has become attuned to the harmony of the universal *νοῦς*, and has cast off all that burden of earth and fire

and water, which clung to it in virtue of the faculties of sense, then, and not till then, will come the perfect representation in time of the supreme idea of the universe, and the various ideas of animal life of which it is composed. And, if ever the individual intellect is thus exalted, it shall know and realise for the first time true beauty and justice and knowledge, that aspect of the ideal world that impressed itself first on Plato's mind¹. Those eternal essences, which were the load-star of his early ambitions, have now found a resting-place worthy of their exalted rank. We saw that one of the chief results of the *Parmenides* was the conviction that the ideas and the supreme idea, if they are to be not merely existent, but objects of knowledge, must have real and lasting connexion with one another as well as with the flux of sense. Here, then, in the *Timaeus*, we find this condition fulfilled; the ideas stand to the supreme idea in the most intimate of relations: they are aspects of the perfect and all-sufficient νοῦς, which is brought into vital contact with the souls of all the generic and specific forms of life.

Finally, may we not say that Plato has in this dialogue amply satisfied the criteria furnished by the criticism of the *Parmenides* and *Sophist*? The supreme εἶν, if it is to be known, must exist not in self-identity merely, but in relation to the many too. Further, in the *Sophist* it was found that it must possess κίνησις, ζωή, νοῦς and ψυχή. We are now assured that the θεῖος νοῦς is the supreme εἶν, that it has life and activity, and that only in so far as they imitate it successfully can the individual souls be said to possess reality at all.

¹ Cf. *Phaedo* 114 c.

ESSAY IV.

THE IDEAS AS Ἀριθμοί.

THE portion of the *Timaeus* with which we must now deal forms a contrast in many respects to the former half, which we have just left. The object of the earlier chapters was not so much to describe to us the cosmos in its material aspect, as to unveil to us its ideal prototype, and to take us to the very source of all its activities, to discover to us a universal and eternal νοῦς, which manifests itself in the cosmos just as surely as our minds find expression in our bodies, and which, when conceived of as functioning in unrestrained perfection, is the ethical ideal in imitation of which the world, with all the creatures contained therein, was created. From 47 E onwards, however, Plato addresses himself to the task of examining the material universe itself, in the hope of laying down, if possible, certain definite principles, which may be said to govern the operations of the universal soul in the visible world. Having given dogmatic utterance to his conviction that νοῦς and ψυχὴ are the ultimate cause of all phenomenal things, he now endeavours to support it by a minute examination of phenomena. His attitude, therefore, has changed;

all his attention is now directed towards the material universe itself, in order that he may find therein the proof of the belief that he has just proclaimed. This is, indeed, the only course open to him; it is inevitable that he should begin with the world of time and space, in which he finds himself. It is only through using material objects as images that we may hope to assume the existence of the ideas, which are the goal of all knowledge. If we would try from the outset to look straight at the sun, we should only make for ourselves darkness through excess of light.

Plato, accordingly, begins this second part of the dialogue by declaring his intention of retracing his steps in order to set forth the nature of ἀνάγκη and the πλανωμένη αἰτία, which share with νοῦς the responsibility for the material order of things. In particular, he is desirous of enquiring into the nature of air, earth, fire, and water, whose existence was assumed from the first as being essential to the materiality of the universe, but of which no explanation has yet been given. This new method and point of view necessitate a fresh classification of existence, based upon a different principle of division. Instead of having two classes, the νοητόν and the ὁρατόν, the παράδειγμα and the μίμημα, we now have three, viz., the νοητόν, the ὁρατόν, and the ὑποδοχὴ γενέσεως, an εἶδος which is χαλεπὸν and ἀμυδρόν. To define this latter, the Substrate of Becoming, is an extremely difficult task. Its nature can scarcely be expressed in positive language; in fact, it cannot be described at all without calling to our aid the phenomena of which it is the receptacle. Now we see that fire, water, and all substances that are possessed of

sensible qualities, are forever in a process of transmutation; water is continually changing into earth or air, and air in turn becomes fire; the flux is ceaseless, and it is impossible to call any of these bodies by any definite term, since one is never sure that it has not already become different. But one may conceive of something *in which* all these varying phenomena arise, and to which, in virtue of its permanence, a name may safely be assigned. In order to understand the nature of this receptacle we may take the illustration of gold, which in the hands of the craftsman takes upon itself in turn all manner of forms and shapes, but which in strictness can be termed gold and nothing else. In like manner the ὑποδοχή receives within itself all material bodies, and puts on all manner of varying appearances, while it is itself utterly devoid of body or form. This is its sole function, and it is eternally true to that function. The ever-varying bodies that enter into it are likenesses of eternal existences, copied from them in a strange and mysterious fashion which will hereafter be explained. Meantime we are satisfied that the universe may be said to consist of three kinds: τὸ γιγνόμενον, τὸ ἐν ᾧ γίγνεται, and τὸ δ' ὅθεν ἀφομοιούμενον φύεται τὸ γιγνόμενον.

Here Plato pauses to answer a supposed objection. Are you right in mentioning likenesses and models in this connexion? Is there, for example, such a thing as πῦρ ἐφ' ἑαυτοῦ, the likenesses of which enter into the ὑποδοχή? And are there ideas of all the other bodies which we have been calling μιμήματα τῶν αἰεὶ ὄντων? The answer is decisive. If νοῦς and δόξα ἀληθής are to be eternally distinct, then assuredly there are ideas

of this kind, entirely separate from the sensible objects which we perceive, ἀναίσθητα ὑφ' ἡμῶν εἶδη, νοούμενα μόνον. We therefore re-affirm our classification. There is, first, the invisible and immutable idea, to be grasped by νόησις alone; secondly, its copy, which is subject to ceaseless flux, and apprehended by αἴσθησις, and, thirdly, eternal χώρα, the ἔδρα of all Becoming, which is grasped λογισμῷ τινι νοθῶ. It is this χώρα, adds Plato, which is always perverting our judgment when we are considering immaterial things. Because a material body, being a perishable copy, must perforce arise in something, in order to come into existence at all, we must needs apply spatial relations to the ideal world too; whereas reason should tell us that the natures of idea and copy are so essentially distinct that the conditions of the one are in no wise applicable to the other.

Proceeding with his analysis, Plato goes on to say that the ὑποδοχή, being ceaselessly filled with earth, air, fire and water, is continually disturbed, and is subject to a vibratory motion due to the diversity and inequality of the bodies which enter into it. This vibration reacts also upon the objects by which it is caused, and has the effect of separating and sifting them, so that similar things are gradually drawn together.

We have now to learn the explanation of the generation of fire and the other elements, which we were led to expect at 50 c. In order to make them as fair as possible, the creator from the first shaped them with forms and numbers. Now, seeing that they are material bodies, and that material bodies require depth and therefore surface, it is plain that these elements

have surface, of which the simplest example is the triangle; and all triangles may be resolved into two, the rectangular isosceles and the rectangular scalene, which we accordingly affirm to be the bases of the elements, although we acknowledge that there may be ἀρχαὶ even beyond these, known to God alone, and such as are friends of God. Our task now is to choose the figure appropriate to each element, and to decide upon the ἀριθμοὶ or proportions in which the constituent triangles are combined (οἷον δὲ ἕκαστον αὐτῶν γέγονεν εἶδος καὶ ἐξ ὅσων συμπεσόντων ἀριθμῶν¹). To begin with fire, we find that six rectangular scalenes combine to form an equilateral triangle, four of which may be placed together to form the first regular solid, the pyramid. This figure we conceive to be the typical form of fire, and we may therefore say that fire is composed of six primal scalenes combined together four times, or a total of twenty-four primal scalenes. The form of air is the octahedron, and is made up of six multiplied by eight, or forty-eight primal scalenes. Water, which is represented by the icosahedron, is composed of 6×20 , or 120, of the same primal triangles. These three elements, being all capable of transformation into one another, are accordingly furnished with the same base. Earth, which stands apart from them, has as its element the rectangular isosceles, which, when combined in six sets of four, gives rise to the cube, the εἶδος of earth. Earth, then, is formed of 4×6 , or 24, of the rectangular isosceles triangles.

This apportioning of the regular solids to the different elements is justified by a comparison of the

¹ 54 D.

attributes of the figures with those of the elements they denote. As earth is the most stable of elements, so the equilateral triangle and the square are the most stable of plane, and the cube of solid, figures. Fire too, being the keenest of the four elements, is well represented by the pyramid, which is the sharpest of solid figures.

These, then, being the figures of which fire, air, earth and water are constituted, we must first conceive of each of them as being in isolation too small to affect the eye; only when gathered together in great multitudes can they be supposed to give any impression of magnitude. Next, all these bodies, three of which may have ceaseless generation into one another, must be regarded as continually changing their positions, owing to the vibration of the *ὑποδοχή*, and as being inevitably carried towards the others of their own kind, inasmuch as similar things are always attracted towards one another, and there is no arbitrary distinction of "up" and "down." In the course of this vibration and attraction it may happen that the octahedrons of air, or the icosahedrons of water, become divided by the keenness of the pyramids of fire, and the octahedron thus changes into two particles of fire, and the icosahedron becomes one particle of fire and two of air. Earth, however, can only be dissolved into its parts, which thereupon drift about till they can be united once more. But on this principle alone it would seem that kindred particles would speedily become associated, and all need of further disintegration would cease. There is, accordingly, another force at work, which prevents such stagnation, viz., *ἡ τοῦ παντὸς περίοδος*, which compresses the

matter of the universe with such all-pervading force that no intervals are suffered to remain between the kinds, and consequently one is continually being compelled to interpenetrate the other. These two forces, then, the vibration of the ὑποδοχή, and the πίλησις of the revolving universe, combine to produce eternal movement, and disturbance among the kinds.

The remainder of the dialogue is occupied by a minute examination of all the kinds that arise by combination of these four elements, together with a physiological analysis of the senses and the bodily functions. Within the elements themselves, we are told, there are distinct γένη, which owe their variety to differences of size in the primal triangles of which they are composed. But, apart from these, there are innumerable compound substances, such as stone, earthenware, salt, formed of different proportions of the four elements. Animal and vegetable bodies, both in whole and in part, arise out of one or other combination of fire, air, earth and water¹. Marrow, bone, flesh and sinew are all compounded in this fashion². Everything in the universe, in fact, as far as its materiality is concerned, may be built up out of fixed proportions of these ingredients.

It is now time to turn back and follow up the course of Plato's argument in order to set down in plain language the results at which he has been aiming. If we are to take 50 c seriously, Plato's intention has been to show us in some measure how the εἰσιόντα καὶ ἐξιόντα, the ever-varying flux of phenomena, may be regarded as the representatives in space of im-

¹ 73 B-E.

² 74 c, d.

mutable εἶδη, which exist eternally and are independent of actual relation to space and time. Our object then must be, first, to come to some understanding concerning the ὑποδοχή, in which phenomena are said to arise, and, secondly, to discover the nature of the εἶδη of fire, etc., which are introduced in such an emphatic way at 51 B. We shall then be in a position to draw some conclusions regarding the aim and objects of knowledge, according to Plato's latest utterance on the subject.

Those who would interpret the *Timaeus* literally seem to be disposed to treat the ὑποδοχή as an actual κενόν, or void, like that of Democritus, in which actual atoms did, at some prehistoric period or other, float about in the way described. This view is of course excluded by our general treatment of the dialogue, but there are besides two serious considerations that make it absolutely impossible to hold it for a moment. First of all, one cannot conceive of Plato as being willing to imitate the Atomists after the wholesale contempt which he has poured upon them, not only in previous dialogues, but in the *Timaeus* itself¹. The open enemy of the Atomists is not likely to adopt their materialistic bases and automatic processes in trying to account for an orderly world. Secondly, the whole development of the conception of the ὑποδοχή is opposed to any such view. Plato is obviously taking the material world as it is, and gradually abstracting from it everything of a bodily nature. The κενόν is an abstract conception, which is reached only after laborious thought; it is not, like that of

¹ See 46 D; 55 D. Cf. *Soph.* 265 c, D.

Democritus, assumed as the primary condition of the universe. From pages 49 A to 51 B, which are devoted entirely to the gradual unfolding of the notion of *χώρα*, we learn that it is that which remains of the material world when it is divested of all body, shape and quality. It is that underlying principle which remains permanent amid their everlasting mutability, and may be illustrated by the example of gold, upon which all manner of shapes are continually impressed and as continually obliterated. It is plain that Plato's whole endeavour here is to get a firm grasp of the notion of space by abstraction, for he can only conceive of it by ridding his mind of the actual world he sees. So far from describing a material process from space and atoms to actual existence, he presents us here with a logical progression from actual existence to space and the geometrical elements.

What then is the nature of this *χώρα*, when it has at length been reached? Enough has been said to show that it was not intended for an actually existent void. Let us, therefore, try to elicit from Plato's further treatment of the subject some information regarding its nature. Plato, having conceived the notion of the substrate, immediately fills it with certain elementary triangles, which combine in certain fixed modes to form figures, which are the *ἀρχαὶ* of the four elements and their combinations. *Χώρα* also allows of the activity of certain forces, which unite to keep the *ἀρχαὶ* in a state of continual disturbance. Now, these *τρίγωνα* are manifestly the plane triangles of geometry, the perfect, ideal triangles which the crude triangles of our diagrams affect to represent,

the ἀεὶ ὄντα of *Republic* 527 B, which are a stepping-stone in our mental progress towards the ἰδέα τὰγαθοῦ. This conclusion is not only the natural inference from Plato's express statement at 53 C, where he makes it perfectly plain that the geometrical laws conditioning the perception of solids are his sole consideration, but it is the only explanation that tallies with the details of Plato's exposition. Mr Archer-Hind, at pp. 203, 204 of his edition of the *Timaeus*, has pointed out that no solid bodies could fulfil the requirements made for the pyramids, octahedrons, and other figures in c. 22. Two solid pyramids could not possibly be transmuted into a solid octahedron, but, according to the geometrical law regulating pyramids and octahedrons, two pyramids consist of eight equal planes, and thus supply all that is theoretically necessary to the constitution of an octahedron.

The triangular planes, then, and the figures alike are to be conceived of as the ideal triangles and figures of geometrical definition, the perfect and immutable laws which form the foundation of the sciences called geometry and stereometry. They are eternal and immutable, in contradistinction to phenomenal things which are apprehensible by the senses alone; and yet they are πολλά, inasmuch as their multiplication is theoretically essential to the production of more advanced figures. These, then, are the σχήματα which Plato's ὑποδοχὴ is destined to contain, and, difficult though it be to define its nature, we are assured that our explanation of it must be consistent with the nature of the τρίγωνα, and the more complex εἶδη, which it is made to contain. It is, accordingly,

impossible either to regard the ὑποδοχή as an actual void, or to connect it directly with the world of γιγνόμενα at all; Plato has indeed taken great pains to divest it of all trace of the phenomenal. It is an ideal χώρα, the χώρα which is logically necessary for the operations of the ideal τρίγωνα and πυραμίδες of true geometry; it is a χώρα which exists in the mind alone, λόγῳ περιληπτόν.

It will be remembered that we noticed some attempt at a similar analysis in the *Philebus*. There Plato conceived of the ὕλη ἐξ οὗ γίγνεται τὸ πᾶν as sensible qualities, abstracted from the objects in which they were made to inhere by the mind. But the distinction between the ὕλη ἐξ οὗ and the ὕλη ἐν ᾧ was evidently unconsciously present to his mind, for he spoke of a ἔδρα, in which these qualities (τὸ μᾶλλον τε καὶ ἧττον) arise, so that in the background of his thoughts there was evidently the notion of a ὕλη ἐν ᾧ as well as of a ὕλη ἐξ οὗ. In the *Timaeus* the sensible qualities, the ὕλη ἐξ οὗ, have been entirely superseded. Plato seems to have become more and more convinced of their relative and secondary character. At 61 E ff. he informs us that all such qualities are simply the varying effects which the different structures of the elements make upon our senses. He appears to have examined these qualities, and to have discovered that they may all ultimately be reduced to two, or rather that they all depend ultimately upon the principle of two, viz., τὸ μείζον καὶ σμικρότερον. Spatial extension and size are the fundamental attributes of everything bodily, and accordingly we may in our present examination discard ὕλη ἐξ οὗ, and concentrate our attention upon ὕλη ἐν

ῥ. It may be noted that Aristotle¹, ignoring Plato's ultimate rejection of antithetical qualities as ὕλη, chose out hot and cold, wet and dry, as the proximate ὕλη of material bodies, probably in imitation of the *Philebus*. The τρίγωνα of the *Timaeus* were not calculated to appeal to his practical turn of mind.

As Plotinus² indicates in the *Enneads*, one thing may be said to be in another quite apart from any question of spatial relation, just as many things inhere in mind, and hence the ὑποδοχή possesses only a φάντασμα of ὄγκος. From chapter 20 onwards, therefore, we have before us the conception of geometrical space, containing within itself the ἀΐδια τρίγωνα, and the figures formed of these, which are the ideal counterparts of the four elements of the universe; and these ἀρχαὶ inhere in it not in a state of rest, but they are evermore subject to two forces, which Plato felt to be at work in the material universe. The vibration and the πίλησις, too, have been abstracted from the confusion of the visible objects which they are seen to affect, and transferred to a geometrical region where their operations may be viewed in the clear light of the intellect, and set down in fixed and unambiguous formulae. One is forcibly reminded of the ὄν τάχος and the οὖσα βραδυτή of *Republic* 529 D, also of the true heavens, wherein there moved true stars. Plato's whole object in this exposition of physical phenomena has been to arrive at exactitude of some kind, to be able to state in some fixed language the principles of order that underlie

¹ See Ar. *de gen. et corr.* B. 1. 329^a 24; 2. 329^b 7; 3. 330^a 30.

² Plotinus, *Enneads* ii. 4. 11 (xii. 11 Kirchhoff).

the *γιννόμενα* of the universe. Hence the whole totality of physical *γένεσις* has been translated into ideal being in terms of mathematical and geometrical relations.

If this be so, what are we to say about the ideas of fire, etc., to which special attention was drawn at 51 B? In considering this question we should bear in mind continually the fact that Plato's point of view has changed since we last heard of ideas at 39 E, and that the three-fold classification into *ὄν*, *γιννόμενον*, and *ὑποδοχή* must needs affect to some extent our view of *τὸ ὄν*. For *τὸ ὄν* is now the father, and *χώρα* the mother, of *γένεσις*; the idea is not wholly responsible for its copies, but must enter into relation with *χώρα* for their production. The idea, accordingly, must be expressed in such terms as would render the simile appropriate. The function of the *ὑποδοχή* is to afford room for *γένεσις*; it is the recipient of all that is spatial; the idea, then, must be conceived as far as possible in terms consistent with spatial relation. Plato, immediately after he has affirmed the existence of ideas of fire and the rest, proceeds to give an account of the *διάταξις*, or arrangement, of each of these bodies. Fire, it is discovered, has as its intelligible *ἀρχή* the pyramid, and the pyramid is inevitably composed of four sets of six primal scalene triangles. Similarly, the octahedron and the icosahedron, being the *ἀρχαὶ* of air and water respectively, are the result of the combination of eight, and twenty, sets of six primal scalenes. Earth has for its *ἀρχή* the cube, to compose which six sets of four rectangular isosceles triangles are always required. Thus the law governing fire-formation is that 24, or 6×4 , primal scalenes shall combine to form a pyramid, the

ἀρχὴ of fire. Air, water, and earth are likewise subject to similar laws; and Plato, by taking up every variety of material body and substance in turn, might have found similar laws to regulate them all. In the case of stone, flesh, bone, and the like, he has shown us how the principle works out. The more complex structures of the bodies of animals, however, have not been directly dealt with, but that Plato conceived them too to be composed of primary triangles combined in varying ways is obvious throughout the physiological discourse.

These material laws, then, that govern all the kinds within the material universe, I hold to be the εἶδη ἐφ' ἐαυτῶν mentioned at 51 B. Such a view finds confirmation from many sources. First, one cannot but feel that material bodies such as fire, air, water and earth, and their combinations, which exist simply to be perceived by sight and touch¹, and are mere modes of matter, stand on quite a different footing from the ζῶα, that have within them the very principle of life, and should, therefore, receive a different treatment. We cannot, accordingly, include these ideas of fire and the like among the first-mentioned ideas of 39 E, the νοητὰ ζῶα, which were special aspects of the supreme and ever-active νοῦς. At the same time, though the elements are not as intimately connected as the ζῶα with the great αἰτία, νοῦς, that underlies all phenomena, they are none the less eternal manifestations of noetic force. The θεός made them fair, and brought them into order according to definite and eternal laws. These laws, therefore, are not unworthy of the title of εἶδη; they

¹ 31 B.

are unbegotten, imperishable, invisible, objects of thought alone.

Secondly, our investigation of the *Philebus* resulted in the conviction that the ideas there were to be found in the class of μέτρια, the eternal laws of proportion, which depend for their realisation on mathematical ποσά. All existing μικτά, we found, could be resolved into two elements, of which the ὕλη of sensible qualities was one, and the ideal law of proportion the other, while universal νοῦς, as αἰτία τῆς μίξεως, was the reality yet further back to which their existence could be traced.

A third confirmation lies in the fact that the εἶδη as ἀριθμοὶ were a phase of the ideas which attained considerable importance in the later days of Plato's school, and which was always said by Aristotle to have originated in the teaching of the master himself, in spite of all the accretions of the Platonists that tended to obscure it. A minute analysis of the evidence on this point awaits us in a later paper; but it is quite clear that these formative laws are nothing else but ἀριθμοί. Each εἶδος is said to consist of definite ἀριθμοί, or proportions, of primary triangles, and Plato himself uses the word twice in his exposition of the subject (εἶδεσί τε καὶ ἀριθμοῖς, 53 B; ἐξ ὅσων συμπεσόντων ἀριθμῶν, 54 D). All these chapters, indeed, breathe the spirit of the mathematician. Never since the *Republic* has Plato given the subject so much attention, or assigned to it so lofty a function.

Finally, have we now reached the limit of human knowledge? From the first the εἶδη ἐφ' ἑαυτῶν were to be objects of human knowledge, and now the possibility

of knowing them has been realised beyond dispute. But are we to stop there? Are we to be content with knowing the fixities inherent in matter, eternal and immutable though they be, and never penetrate further? We were told in the earlier part of the *Timaeus* that there was an ultimate αἰτία for all Becoming, a παράδειγμα for all creation. Is this ever to be known or realised? There are considerations which seem to show that Plato did not despair of attaining even this ambition. It must be remembered that Plato has been trying to work back to the subjective ἀρχαὶ of matter, and has reduced the various material kinds to the primary notions on which our apprehension of them, as matter, depends. After all, ἀριθμοί, though they prove to us the presence of νοῦς in the world, are not in themselves ultimate; number is simply a necessity of our mind, as essential to its working as the categories of Same and Other. Hence Plato, in resolving matter into ἀριθμοί, has resolved it into its subjective factors, thereby taking us to the limit of the analysis the finite mind can reach. May mind, *quâ* infinite, go a step further, and pass beyond the subjective ἀρχαὶ to the absolute ἀρχὴ of all? At 53 D we are told: τὰς δ' ἔτι τούτων ἀρχὰς ἄνωθεν θεὸς οἶδε, καὶ ἀνδρῶν ὃς αὖ ἐκείνῳ φίλος ᾗ. In this we can only see a hope that the human mind may some time, somehow, through a diligent pursuit of the εἶδη as ἀριθμοί, rise to a still higher form of knowledge, and know by direct intuition the νοητὸν ζῶον and the νοητὰ ζῶα, which represent the ideal in its highest form. As in the *Republic*, ἀριθμοὶ are to be the stepping-stones to the realisation of the Good; but the

ἀριθμοὶ have now a greater importance than formerly, since they represent the highest actual point which human knowledge has yet reached. Διὸ δὴ, says Plato, χρὴ δὴ αἰτίας εἶδη διορίζεσθαι, τὸ μὲν ἀναγκαῖον, τὸ δὲ θεῖον, καὶ τὸ μὲν θεῖον ἐν ᾧ ἀπασι ζητεῖν κτήσεως ἕνεκα εὐδαίμονος βίου, καθ' ὅσον ἡμῶν ἢ φύσις ἐνδέχεται, τὸ δὲ ἀναγκαῖον ἐκείνων χάριν, λογιζόμενον, ὥς ἄνευ τούτων οὐ δυνατὰ αὐτὰ ἐκείνα, ἐφ' οἷς σπουδάζομεν, μόνα κατανοεῖν, οὐδ' αὖ λαβεῖν, οὐδ' ἄλλως πως μετασχεῖν. (68 E—69 A¹.)

Before we conclude the subject of the ἀριθμοί, there are two points which would seem to demand some further elucidation. The first is concerned with the objective reality of space. We realise that the χώρα of the *Timaeus* is not an actual void, but an ideal, mathematical χώρα. May we then draw any conclusion as to whether Plato considered space to have independent existence, or whether it was to him a mere illusion? Here, of course, one feels the inappropriateness of making Plato speak in Berkeleian phraseology, and yet it is impossible to suppose him to believe that space was anything in itself. The whole universe, and time too, are always but shadows that appeal to the senses alone. Fire, air, water, and earth, which constitute the material universe, only exist for the sake of being seen. Qualities, which, after all, are what we have most in mind when we allude to the material world, are just affections of our senses, caused by something, it is true, but by something of alien nature to the things we see. When one divests the universe of these qualities, one has left indeed the ὑποδοχὴ γενέσεως, the δύναμις of γένεσις, within which

¹ Cf. 59, 60.

to reconstruct ideally the eternal principles of matter, but this has no objective existence; it is a φάντασμα. With the reduction of qualities to their subjective factors, one rejects the independent reality of the whole material universe, and consequently of extension too, for extension can never have actual existence apart from extended objects.

The second subject referred to is that of the εἰσιόντα καὶ ἐξιόντα, which have usually been identified¹ with the μαθηματικά, or τρίγωνα, of c. 20. This identification I believe to be impossible for the following reasons. In the first place, there is nothing whatever in the actual context of 50 c to lead one to associate the εἰσιόντα καὶ ἐξιόντα with μαθηματικά at all. There has as yet been no mention of geometrical forms. Plato's sole aim here is to reach a conception of pure space by stripping the world of every visible and variable quality. Space is that ἐν ᾧ ἐγγιγνόμενα ἀεὶ ἕκαστα αὐτῶν φαντάζεται καὶ πάλιν ἐκείθεν ἀπόλλυται². It is ἡ τὰ πάντα δεχομένη σώματα φύσις³, which nevertheless μορφήν οὐδεμίαν ποτὲ οὐδενὶ τῶν εἰσιόντων ὁμοίαν εἴληφεν οὐδαμῇ οὐδαμῶς⁴. Hence it is not a question of triangles at all, but of γιγνόμενα, which are in continual flux.

Secondly, the triangles are not εἰσιόντα καὶ ἐξιόντα; they do not come into being and vanish, for they are regarded as filling up every nook and cranny of the ὑποδοχή, so that void may be as far as possible non-existent. To this it may be replied that the particular combinations of triangles—pyramids, octahedrons, and

¹ e.g. Adam's *Republic*, vol. ii. p. 161.

² 49 E.

³ 50 B.

⁴ 50 c.

the rest—come and vanish; but even so the *ὑποδοχή* does not rid itself of *μαθηματικά*, the constituent triangles being always constant¹, and the cube does not suffer destruction at all. How could the *εἰσιόντα καὶ ἐξιόντα*, which are admittedly always coming and going, be identical with *μαθηματικά*, or the *πέρας ἔχοντα* of the *Philebus*, which are directly opposed to that which is in flux? The *εἰσιόντα καὶ ἐξιόντα* are akin, if to anything, to the *ἄπειρα*, which are subject to unceasing fluctuation. But *μαθηματικά* represent measurement and definiteness, and are of a totally different nature.

Thirdly, mathematics have always held an exceedingly high place in Plato's esteem, their objects being *ἀεὶ ὄντα*, and akin to the ideas. It is inconceivable that he should here degrade *μαθηματικά* to the level of phenomena, and say that they are merely, like them, *μιμήματα τῶν ἀεὶ ὄντων*².

The reason why these *εἰσιόντα καὶ ἐξιόντα* have been taken for *μαθηματικά* is apparently that they have been confused with the *μορφαὶ* and *σχήματα* which occur in the simile of the gold, which is employed as an illustration. In the simile the shapes impressed on the gold are the counterpart of the *εἰσιόντα καὶ ἐξιόντα*, because the gold has to correlate with the substrate; but since the substrate has to be devoid, not only of shape, but quality of every kind, it is impossible to conclude that shapes alone are supposed to enter, and vanish from, the *ὑποδοχή*. Plato certainly does not say so; he calls the *ὑποδοχή ἢ τὰ πάντα δεχομένη σώματα φύσις*, and the *σώματα* that come and go are generally

¹ 56 D.² 50 C.

styled τὰ εἰσιόντα καὶ ἐξιόντα. The use of ἰδέα and εἶδος occasionally at 50 D, E, and 51 A, need not be taken to imply that shape alone is intended, since the language here is particularly affected by the simile of the gold previously referred to, and form is for the nonce regarded as the typical attribute of body. The simile of the unguents¹, to produce which varied scents are imparted to a scentless fluid, apparently serves Plato's purpose just as well as that of the gold. Shape, consequently, is not the essential point in the simile; if any further proof were wanted, the final moral of the passage at 51 A should suffice: διὸ δὴ τὴν τοῦ γεγονότος ὁρατοῦ καὶ πάντως αἰσθητοῦ μητέρα καὶ ὑποδοχὴν μήτε γῆν μήτε αἶρα μήτε πῦρ μήτε ὕδωρ λέγωμεν, μήτε ὅσα ἐκ τούτων, μήτε ἐξ ὧν ταῦτα γέγονεν (i.e. the qualities of the *Philebus*). That is, the εἰσιόντα καὶ ἐξιόντα of the ὑποδοχή, as opposed to those of the gold, are visible air, earth, fire, water, and their constituents and compounds, not μαθηματικά at all.

Looking backward over the road that we have travelled since a theory of knowledge was first stated in the *Republic*, we find that Plato has done much to justify the hope which he there set before us. The dialectician was to start from the world of sensible objects, and, through the continuous assumption of immutable εἶδη, rise to the highest idea of all, an ἀρχὴ ἀνυπόθετος. In the interval he has concluded that many things of which he then posited εἶδη are but instruments to help us along the road to knowledge; they can never serve as its end and goal. Antithetical qualities, for instance, are but the terminology of the senses. The Good and

¹ 50 E.

Beautiful are, generally speaking, the leading predicates of the science of aesthetics. The categories of Same and Other are not ideas, though they are of the utmost importance to the operations of νοῦς and αἴσθησις alike. They are the basis of all classification, and through them alone can we hope to climb the ladder of knowledge at all. They are the foundation of the mathematical sciences, which lead us to the very forecourt of the ἀγαθόν, and which, in default of the ἀγαθόν itself, furnish us with intermediate εἶδη. He who would make the ascent to the supreme idea must, therefore, begin with the scientific classification of the objects of sense, through which such information and intellectual power may be acquired as to enable him to posit the existence of mathematical ideas, hypotheses whose truth can only be assured when they have found confirmation in the ἀρχὴ ἀνυπόθετος. Having attained to them he already has an ideal explanation of phenomena, and by diligent study he may hope to imitate in ever-growing perfection the motions of the ἀληθινὸς καὶ θεῖος νοῦς, and realise in some degree the end and aim of being, the ἀγαθόν, ὃ δὴ διώκει μὲν ἅπαντα ψυχὴ καὶ τούτου ἕνεκα πάντα πράττει, ἀπομαντευομένη τι εἶναι, ἀποροῦσα δὲ καὶ οὐκ ἔχουσα λαβεῖν ἱκανῶς τί ποτ' ἐστὶν οὐδὲ πίστει χρήσασθαι μονίμῳ, οἷα καὶ περὶ τὰλλα, διὰ τοῦτο δὲ ἀποτυγχάνει καὶ τῶν ἄλλων, εἴ τι ὄφελος ἦν. (*Rep.* 505 E.)

ESSAY V.

THE PYTHAGOREAN *Ἀριθμοὶ* AND THEIR RELATION TO THE PLATONIC IDEAS.

THE subject of Plato's indebtedness to Pythagorean philosophy is one which most authorities agree to disregard and minimise as far as they consistently can. This is due partly to the fact that the mists of neo-Platonism and neo-Pythagoreanism, creeping in between Plato and ourselves, have so obscured the original outlines of the two schools that it seems well-nigh impossible to discover where Pythagoreanism ends and Platonism begins, and partly to the difficulty one always experiences in trying to elicit from Aristotle, our only accredited witness, any unbiassed account of previous schools of thought. The whole question, in fact, is one that calls for the exercise of the critical faculty rather than the laborious collection of evidence. In the present paper, therefore, I do not intend to investigate and catalogue the latent resemblances between the two schools so much as to indicate the great advance which was made by the theory we were last considering upon the early fancies of the Pythagoreans. My first task will be to try to come to some definite conclusions as to what the Pythagoreans really held; my second to compare their views with the

mature doctrine of ἀριθμοὶ which Plato had reached in the latter half of the *Timaeus*.

The evidence for the genuine beliefs of the Pythagoreans is perforce restricted to that afforded by Aristotle in various parts of his *Metaphysics*. All other writers, such as Strabo, Stobaeus, and Alexander Aphrodisiensis, who give details concerning their doctrines, lived at too late a date to escape the contamination of the neo-Pythagorean craze of the first century B. C. Confining ourselves then to Aristotle, let us set down the substance of the Pythagorean doctrine as stated in c. v. of *Metaphysics* A and elsewhere. From the earliest times, we learn, the Pythagoreans were expert mathematicians, and their chief, and, perhaps, earliest, dogma was that all things are number. To quote the account in *Metaphysics* N¹: "The Pythagoreans, because they perceived many of the attributes of number to inhere in visible bodies, held that existing things were numbers; and these numbers were not separate from, but immanent in, things. And why? Because numerical relations are inherent in harmony, and in the heavens, and in many other things.' We gather, then, that Pythagoras and the Pythagoreans were impressed by the potency and utility of number, in the first instance, through their mathematical and musical experiments. In music, Pythagoras himself had tested its value by his discovery of the chief intervals of the scale²: the quality of different notes was found to depend upon the proportionate lengths of the monochord which was struck to produce them. Philolaus, their great astronomer, had made plain the intricate

¹ *Met.* N. 3. 1090^a 20.

² Cf. Diog. Laert. viii. 12.

harmony and regularity with which the heavenly bodies performed their courses. It was borne in upon them in general that the numerical properties of a thing were its essential attributes, the most definite account that could be given of it. Consequently they were led to affirm boldly that things are number, and that the opposite characteristics that appertain to things are but varieties of the ultimate opposition of odd and even. We are told in *Metaphysics* A, c. v., that some Pythagoreans, notably Alcmaeon of Croton, resolved number into two constituents, the odd and the even, or, in geometrical terms, the finite and the infinite, and declared that these constituents, under a variety of names, were the constituents of all existing things. Alcmaeon was so interested in this point that he drew up a lengthy table of the most striking oppositions of this kind; and the antithesis in the first column was invariably regarded as the source of good, that in the second as the origin of evil, in the things which it helped to constitute.

But what was their precise meaning when they said all things are number? Aristotle tells us plainly enough that they regarded numbers as the material cause of things¹, and that the numbers, instead of being χωριστά, were actually immanent in the things themselves; nay, the things *were* number. He thereupon proceeds, in c. viii.², to draw a ludicrous picture of the Pythagorean universe, in which the absurdity of the theory is made manifest. The Pythagoreans, he says, made the whole universe to consist of number, and it was primarily the heavens, the heavenly bodies, and all the inferior objects

¹ A. 6. 987^b 27.

² A. 8. 990^a 19.

of perception, that they sought to explain by an elaborate use of their ἀρχαί. Even thus far one can scarcely follow them, seeing that they leave motion entirely unexplained; but what are we to think, says Aristotle, when they extend their theory even to things that are higher in the category of reality than visible objects, to abstract conceptions, to δόξα, καιρός, ἀδικία, κρίσις or μῆξις? For they have shown conclusively that each of these, too, is a number. How can we accept this, knowing that there is only one kind of number, that of which external nature is composed? One would expect to find at least two different classes of ἀριθμοί, one appropriate to visible objects, and another to be reserved for νοητά. Are we to imagine a universe in which are to be found, not only the numbers of all αἰσθητά, but the numbers of all νοητά too? Dire overcrowding would be the result; yet they cannot surely refuse to admit into their world the number of δόξα, when they say that all numbers alike have μέγεθος, and are inseparable from the world of sense.

This criticism unmistakeably breathes the Aristotelian spirit. One instinctively feels that the writer is not only captious, but biassed by his scientific point of view, and that one may be reading a mere travesty of Pythagorean ideas. One has only to recall the materialistic account of the ψυχογονία of the *Timaeus*¹ to realise that the most philosophical conceptions may at times be set down by Aristotle as sheer materialism. It is, therefore, imperative to examine Aristotle's statements regarding the Pythagoreans thoroughly before accepting them as an authentic account of the facts.

¹ *De An.* A. 2. 404^b 16.

First of all, he classes the Pythagoreans with the Ionian nature-philosophers as seeking for reality in αἰσθητὰ rather than in νοητά, and then immediately taxes them with inconsistency in admitting νοητὰ into the sphere of their studies, and accounting for them on the same principle as αἰσθητά. Now if the Pythagoreans tried to account for νοητὰ and αἰσθητὰ alike, it is at once obvious that Aristotle has little or no justification for classing them with the nature-philosophers of Ionia, who concerned themselves with αἰσθητὰ alone. Quite apart from the question whether their explanation of things sensible and spiritual was reasonable or not, the mere circumstance that they took account of spiritual phenomena is sufficient to separate them from the early Ionians, and in all probability Aristotle is doing them an injustice in criticising them as if they looked at things from the same point of view as these. The fact that Aristotle at the beginning¹ cites as typical examples of their ἀριθμοὶ the numbers of δικαιοσύνη, καιρός, and νοῦς, and never instances numbers of sensible things, shows that spiritual phenomena were no mere appendage in their system; they cannot have been introduced, as some think, as “a mere sport of the analogical fancy².” In fact, I regard this two-fold application of the Pythagorean numbers as the fundamental objection to any view which makes them in any sense a materialistic system.

The opposite theory, however, is so strongly maintained by Prof. Burnet in his *Early Greek Philosophy* that it would be as well to consider for a moment the

¹ *Met. A.* 5. 985^b 29.

² See Burnet, *Early Greek Philosophy*, p. 317.

arguments by which he supports it. His opinion is based mainly on the belief that the Pythagoreans were the originators of the doctrine that the point is identical with the monad or unit, that the line, being the first increase of the point, is duality, that the surface is the increase of duality to the number three, and so on. Thus, by identifying the point with the Pythagorean monad, which, according to Aristotle¹, had μέγεθος, and regarding the line as the material increase of this to two units, Prof. Burnet thinks a reasonable origin may be found for Aristotle's statement that the Pythagoreans made number the material cause of things. But surely, if a point be regarded as having μέγεθος, it is to all intents and purposes not a point, but a solid body, and the three increases from point to line, from line to surface, and from surface to solid, are no longer necessary to produce a three-dimensional body. Therefore, although it is possible that the Pythagoreans² had not yet reached an *abstract* conception of the point, the line, or the surface, I cannot agree that they held the view indicated by Prof. Burnet. On the contrary, the resolution of the point into the monad, and of the line into duality, would naturally belong to a period in which the science of geometry had been subjected to speculative analysis; and this period could hardly have been that of the Pythagoreans, seeing that Aristotle himself agrees that they were entirely unversed in logic³, or dialectic, in any degree. It is far more likely that the view in question arose in the time of Plato⁴, or that of his immediate predecessors.

¹ See *Met.* M. 6. 1080^b 20, 32; M. 8. 1083^b 13.

² See R. and P. 105 A.

³ *Met.* A. 6. 987^b 32.

⁴ Cf. *Rep.* 528 A sqq.; *Laws* 894 A.

Moreover, when one comes to examine the evidence for this so-called spatial character of the Pythagorean theory, it is found to consist entirely of Aristotelian references which either do not apply conclusively to the Pythagoreans, or are to be discounted either because of Aristotle's materialistic bias, or for other reasons. The references in which Aristotle¹ is supposed to say that the Pythagoreans identified the line with duality cannot by any stretch of language be proved to point to the Pythagoreans; on the contrary, the text seems to indicate that the later Platonists alone can be intended, and the same criticism applies to the passages² in which the Pythagoreans are supposed to make the monad and the point identical. As for the statement that the monad or unit, according to the Pythagoreans³, had μέγεθος, here Aristotle is simply telling his old story over again, and representing the Pythagorean number as a material basis, without inspiring any additional confidence in his view, or taking account of the fundamental objection which was mentioned before. The passages in Aristotle's *Physics*⁴, in which the Pythagorean void is identified with the ἄπειρον, prove nothing, since the term ἄπειρον might quite well be applied to the void without indicating necessarily that the ἄπειρον is inevitably a *res extensa*, or that number, of which it is sometimes a στοιχείον, is invariably, or originally, spatial. The reference to Eurytus⁵, in which the latter is said to have tried to arrive at the numbers of man,

¹ *Met. Z.* 11. 1036^b 12. Cf. *de An.* iii. c. 4. 429^b 20; *de Caelo* A. 1. 268^a 7.

² *Met. Z.* 2. 1028^b 16.

³ See p. 93.

⁴ *Phys.* Γ. 4. 203^a 7; Δ. 6. 213^b 23.

⁵ *Met. N.* 5. 1092^b 10. Cf. *M.* 8. 1083^b 18.

horse, etc., by sketching their outlines, and counting the number of pebbles required to produce them, comes nearest to supporting Prof. Burnet's theory. In isolation, however, it cannot be said to carry conviction, since, in the first place, the process described is extremely obscure, and it is hard to say exactly what Eurytus was aiming at, and, secondly, one can quite well imagine the Pythagoreans using childish methods of this kind to arrive at the numbers of concrete things, without asserting that their whole theory arose in this way. The particular method ascribed to Eurytus was very likely only one of the ways which the younger Pythagoreans employed to give the master's theory a universal application. I cannot, therefore, regard any of this evidence as conclusive in proving that the number-doctrine had a spatial or geometrical origin.

It will appear that little or no satisfaction is to be had by regarding the Pythagorean philosophy through the eyes of later schools. A truer insight, it seems to me, may be gained if we go back in thought to a period anterior to that of Pythagoras himself, and endeavour for a moment to view him rather as the heir of Egyptian and Babylonian mysticism¹, than as the forerunner of Plato. Here, of course, one is approaching a field of research which is as yet only beginning to yield definite results, and from which a rich harvest may be expected in the future. Sufficient evidence, however, is to be

¹ I am of course using "mysticism" here in the sense in which it is most applicable to Eastern beliefs, as the association of divinity with certain material symbols for purely fanciful reasons, quite apart from any intellectual process. (See Inge, *Christian Mysticism*, Appendix B.)

found in hieroglyphic and hieratic literature¹ to make it practically certain that the Egyptians in ancient times attributed not merely to numbers but to the spoken word in general a curious and mysterious potency which is wholly foreign to western nations. In the Pyramid Texts, in fact, we find mentioned a god called Khern, i.e. "Word" (compare λόγος). That which to us is simply an instrument of expression, created by man to serve the necessities of human intercourse, was regarded by them as belonging to an independent order of existence with a vitality of its own, and endowed with all the attributes that compose the description of a living thing. The "word" had a personality like that of a human being², and, provided it were pronounced in the proper manner, and in the proper tone of voice, was powerful in the service of him by whom it was uttered. The creation of the world was due to the interpretation in words by Thoth of the will of the deity.

Number especially seems to have been invested by the Egyptians with these peculiar powers. By the four-fold repetition of their curse-formula, under proper conditions³, the speedy realisation of their desires was ensured. This potency of four is connected by some with the gods of the four points of the compass, but it may have a far less obvious explanation. Their all-powerful and beneficent deities were classed mainly in groups of odd numbers⁴, especially of nine and seven, and, of course, the famous three. This preference for odd numbers in

¹ See Dr Budge, *Egyptian Magic*, preface, pp. x., xi.

² See Dr Budge, translation of *Book of the Dead*, p. 147.

³ Dr Budge, *Egyptian Religion*, p. 107.

⁴ Dr Budge, *Egyptian Religion*, pp. 89-91.

representing divinity seems to indicate that the odd numbers had with them, as with the Pythagoreans after them, a pre-eminence over the even as being a power for good. Seven also played an important part in their rites and ceremonies. The Book of the Dead tells of the seven *Ārits* or halls¹ in each of which three gods were seated, guarded by seven doorkeepers, seven watchers, and seven heralds, and of the seventh formula which, when recited, procured entrance at the door of any one of the seven mansions of Osiris.

The Babylonians, too, apparently, gave special prominence to number; like the Pythagoreans they realised its value in the practical sciences of calculation, and they also regarded it as of mystical significance. There is evidence to prove² that their multiplication table was remarkably well-developed, that they counted up to 12,960,000, and that their tables of weights and measures were very far advanced. Their measurements of time seem to have been based on the division of the zodiac into twelve parts³: thus the Babylonian day was made to consist of twelve double-hours, as the faces of our clocks still indicate. That they assigned magical properties to number and preferred one number over another is plain from the fact that they invariably regarded some days as lucky, others (particularly the seventh) as unlucky. The importance of the number seven, not only among the Babylonians, but with the Eastern nations generally, is of course abundantly

¹ *Egyptian Magic*, p. 165.

² See Hilprecht, *The Nippur Expedition*, pp. 28 ff.

³ Cf. Winckler, *Die Weltanschauung des Alten Orients* (Leipzig, 1903).

illustrated in the Old Testament writings—in the seven towers of Babel, and the numerous repetitions of seven in the instructions regarding Jewish ritual (e.g. Leviticus 4. 6; 14. 16, 51; Numbers 23; Ezek. 40. 22).

Now, although the evidence which has as yet come to light is but slight, it is at least clear that the Egyptians and Babylonians assigned to number a great importance, and attached to it the functions of an independent agency in a fashion that appears strange to western minds. They regarded it as something endowed with power to heal or to harm, to create or to destroy, according as its nature, being good or bad, prompted. Like the "word," it could be described by attributes, favourable or unfavourable, such as were applied to human agents themselves. If this, then, was the general attitude of the East towards number in ancient times, if it was regarded almost with the awe and reverence due to Deity itself, it would be little wonder that there should arise a school, peculiarly subject to Oriental influence, whose leading tenet was that number is the sole arbiter of life. There is no need to prove that Pythagoras ever had actual dealings with Egypt, Babylon, or any other Eastern country; it is undeniable that his system was chiefly a farrago of religious and mathematical precepts, which are analogous to Eastern, rather than Hellenic, thought.

The remarkable importance assigned by the Egyptians to the more general "word" seems to have borne fruit at a later time, and to have led, directly or indirectly, to a form of the Heracleitean philosophy which gave to words and names a per-

manence which was denied to the visible things of the universe. The Heracleitean Cratylus¹, who thus saw in *ὀνόματα* the inmost reality of the fluctuating objects of sense, could not conceivably be termed a materialist. Why then should Pythagoras, the heir of Egyptian and Babylonian mysticism, be accused of materialism for declaring that numbers, to which the learned people of the East had always attributed the greatest magical significance, are the truest reality of things, that things are really number? An assertion of this sort did not necessitate any art of *διαλεκτική*, which we know Pythagoras lacked; to make it there was needed only the impetuous logic of the religious enthusiast, which Pythagoras certainly was. The induction which he drew was neither that of the physicist, nor of the philosopher, but that of the mystic.

My contention, therefore, is that the Pythagorean doctrine described by Aristotle is far more reasonably regarded as the natural development of a mystical view of numbers than as a truly philosophical or physical system. Aristotle, impatient as he was of everything pertaining to the occult, might quite well describe such a system in the obscure and self-contradictory language which we have noted. The point upon which he insists throughout is that the Pythagorean numbers were not abstract conceptions (*χωριστά*), like those of Plato. The Pythagoreans had not, in fact, advanced sufficiently in scientific speculation to make the abstract calculations of our own time: when they counted it was always apparently with a reference to external objects of one kind or another. Aristotle, therefore, concludes that

¹ See Plato, *Cratylus* 386 D, E; 390 D, E.

their doctrine that things are number can only mean that number was to them a material cause, and that each unit had a μέγεθος which contributed to the bulk of the thing. But if the alternative offered us by Aristotle is such a *reductio ad absurdum*, surely he has misunderstood the point at issue. The Pythagoreans certainly did not conceive of number abstractly, but might they not have regarded it vaguely as the mystical cause of things, and have allowed their statements to vacillate, after the manner of mystics, between assertions that things are reflexions of number, and bolder proclamations that things are number itself? Aristotle certainly assigns to them both doctrines indiscriminately¹, without any consciousness that the two views are mutually destructive. If the Pythagoreans did make use of both forms indifferently (and we have no reason to doubt it), then Aristotle is assuredly mistaken in classing them as materialists. By far the more natural supposition is that their vague and mystical modes of expression were to him incomprehensible, and the simplest solution for him was to set them down as materialists, although on this hypothesis the extension of their doctrine to immaterial things was a source of constant irritation. The fact that the symbolical element and the doctrine of μίμησις did undoubtedly play their part in the Pythagorean system seems to me to make it almost certain that the Pythagoreans were mystics rather than philosophers.

This conclusion appears to me still more likely when one considers the subordinate clause of Pythagoreanism,

¹ See *Met. A.* 5. 985^b 27; 987^b 11.

viz., that the odd and the even, being the constituents of number, are the constituents of all existing things. Since all existence has its source in the antagonism of opposites, whatever object we may care to consider is to be regarded as a composition of the opposing forces of odd and even. Now here we have the popular notion of the contradictions of life, which recurs in Heracleitus' *γένεσις ἐξ ἐναντίων*, brought into line with the empirical division of number into odd and even. There are two sides, said Alcmaeon, to most things in life; there is the finite and the infinite, good and evil, male and female, right and left, rest and motion. Number, too, the essence of things, has two phases, the odd and the even; hence it must be that the antitheses of existing things are but variant forms of the ultimate antithesis of odd and even. But this odd and even are also said by Aristotle¹ to have been regarded by the Pythagoreans as material elements. This view seems at first sight to be even harder to justify than the preceding; yet the explanation becomes perfectly easy when once we suppose Aristotle to be understanding mystical and semi-religious formulae in a literal sense. Number once exalted as the mystical basis of things, nothing is more natural than that its fundamental division into odd and even should be regarded as the mystical origin of all the multitudinous antitheses of existing things. If number works good or ill according as it be lucky or unlucky, odd or even, and if number is, somehow, the reality of things themselves, then assuredly the good

¹ e.g. *Met. N. 3.* 1091^a 15.

qualities of things must be caused by oddness, the bad qualities by evenness, in number.

Finally, if one views the Pythagoreans as mystics rather than philosophers, one has no difficulty in the fact that their scheme took account of immaterial, as well as material, phenomena. The mystic is not concerned to make distinctions of this sort. The smaller the barrier set up between spiritual and material the better for his purpose. A theory that is based on fancy and dogma does not need to be tested by philosophical distinctions.

Before passing on to the consideration of Plato, we have to note that although the original idea of Pythagoreanism probably had its source in the Orient, the members of the school apparently worked it out in detail according to their own methods, relying chiefly on superficial analogies. "The Pythagoreans," says Aristotle at A. 5. 985^b 27, "believed that they detected in numbers certain resemblances (ὁμοιώματα) to existing and phenomenal things," and immediately afterwards: "Phenomena indeed appeared to them to be copied from (ἀφωμοιῶσθαι) numbers." The reasons given by later commentators for their choice of particular numbers for particular things are fanciful enough. Some of them may also, as Aristotle indicates, have had recourse to the absurd tactics of Eurytus in order to arrive at the numbers of material objects. These details are of slight importance; they only go to show that the school soon lost what serious scientific interest it had possessed. The main result of our enquiry is that the Pythagoreans were not in the strict sense philosophers, that they upheld number, in a vague

and mystical way, as the source from which all things proceeded, and that the obscure and indefinite form of their statements, and the indiscriminate application of their theory to material and spiritual things alike, show that they had not any exact knowledge of the nature either of number or of form.

Our next task is to compare this doctrine with the numbers of Plato, and to estimate the difference between them. That Plato was steeped in Pythagorean fancy, and extremely familiar with Pythagorean teaching, cannot be doubted by those who are acquainted with his dialogues. Their cardinal doctrines of the transmigration of souls, and of the destruction and reconstruction of the world in definite periods, appear again and again in his works. He is constantly referring to them and adducing them as authorities on matters that appertain to mathematics. That a great gulf, however, yawned between their system and his cannot but appear when one recalls the highly developed mathematical theory that was put forward in the last part of the *Timæus*. There we found Plato¹ making a new beginning, and pitching his song in a different key. The greatest part of his message, perhaps, had already been delivered; he had proclaimed his belief in a universal mind that is the ultimate source of all phenomena. The ἀγαθόν, which in the *Republic* represented the goal and aim for which the whole creation strives, has resolved itself into a θεῖος καὶ ἀληθινὸς νοῦς, and the divine ideas, which have held his imagination captive so long, are but certain aspects and determinations of that Reason.

¹ *Tim. c.* xvii. p. 47 E.

But the ἀγαθόν, with Plato, was not to be a mere hypothesis; it was to be known and realised; it was the goal of all knowledge. How then is he to attain to it? How is he to prepare himself to come into relations with the παράδειγμα of all existence? He can only begin, as the *Republic* suggested long before, with the world of phenomena around him, the world which he perceives through αἴσθησις—that perverted mode of apprehension which belongs to the animal kind alone, and which is the inevitable consequence of the deliberate degeneration of souls, and their transmigration through endless ages into ever-varying forms of life. Starting, then, with the world of sense, Plato endeavours to rise from the perception of body to an intermediate class of ideas which will serve as objects of knowledge until the supreme νοῦς is within reach. In order to describe these ideas, he is forced to delineate an entirely new conception, that of abstract space, the ὑποδοχὴ γενέσεως, within which he builds up mentally the things of time and space, conceived in terms of their geometrical construction. He shows us that all the perceptible objects of the world around us are only perceived subject to conditions of geometrical relation¹, and that the exact expression of these varying relations is the highest mental interpretation of the things they denote. The mind translates into its own terms the materials of sense, and when this happens we are journeying from the material towards the ideal. All the phenomena of nature, therefore, may on this view be regarded as copies of a mathematical idea, according

¹ Cf. *Laws* 894 A.

to which a certain ἀριθμὸς of primary triangular forms is supposed to constitute the characteristic εἶδος or shape of the particular thing.

Now the first and obvious distinction to be drawn between Plato and the Pythagoreans is that the former considered number, form, and space, too, in the abstract and not in the concrete. Number, he tells us in the *Parmenides*¹, is generated as soon as any notion, of whatever kind, comes before the mind for consideration. The mind is forced to count, as soon as it begins to be active. Number is, consequently, of a subjective nature only; it cannot have an independent existence apart from the thinking mind. As to form, we know that he had always in his mind's eye the ideal triangle and the ideal pyramid of γεωμετρία, which, although they had been conceived of course before Plato's day, were almost certainly unknown to the Pythagoreans, whatever later writers, such as Proclus, may say to the contrary. There is, at all events, no sure or conclusive evidence that they had advanced to a conception of abstract geometrical forms. As for the conception of pure, abstract space, it is extremely doubtful whether any of Plato's predecessors had attained to such a clear or complete notion of it as that which we find in the *Timaeus*.

Once Plato had reached these highly abstract conceptions, he could indeed reconstruct the world mathematically without any fear of the ridicule that attended the attempts of the Pythagoreans. Anyone that allowed the truth and reality of mental conceptions would, under these conditions, permit him to have ἀριθμοὶ and yet be sane. It may be objected

¹ *Parm.* 143 D, E.

that something of the mystical element remains in the hope, vague though it be, that he may some day be enabled, through a diligent pursuit of the ἀριθμοί, to rise to the knowledge of the supreme reality itself. Such an aspiration may perhaps be termed mystical, in so far as it makes an assertion without affording visible or reasonable justification, but if it be mysticism at all, it is the mysticism¹ of the man who thinks, the man who realises and does not confound, as the Pythagoreans did, the means and the end. Ἀριθμοὶ to him are only a stepping-stone. While pursuing them he never loses sight of the great reality beyond, which a man must seek κτήσεως ἕνεκα εὐδαίμονος βίου.

Let us endeavour, then, to sum up the difference between the Pythagorean theory and that of Plato. Plato inherited from the Pythagorean school the doctrine that the real essence of a thing is not material air, earth or water, as the case might be, but a certain number, of which the thing was, in some mysterious and inexplicable way, a likeness. The only reason which the authors of the doctrine could give for their assumption was the fact that they had fancied certain resemblances to exist between number and things, and that they had, moreover, been astonished at its efficacy in their musical and mathematical experiments. They could assign no reasonable basis for their faith; they were more mystics than metaphysicians. Plato, pursuing diligently the study of mathematics, came to

¹ Mysticism in this sense would be identical with Inge's conception of it in his *Christian Mysticism*—the "formless speculation" which comes to the aid of philosophy against materialism and scepticism. (See *Christian Mysticism*, Lect. i. p. 22.)

the same general conclusion, namely, that number plays a great part in our experience of phenomena. It would have been unnatural for him, however, to rest content with this vague generalisation. The severe discipline to which he subjected himself in the *Parmenides*, the *Sophist*, and kindred dialogues, had made clear to him the nature of mind and its mode of operation. Sensation, with him, was a degenerate form of apprehension, arising from the body, with which the soul is clogged. It can *never* give accurate information concerning the universe. Sensation told him that the universe is bodily; whereas his reason knew that its truest and highest nature was that of mind and soul. The philosopher must, however, *begin* with the data of sensation, for thence he may, by the activity of pure νοῦς, discover the conditions and principles which underlie the ever-varying illusion of sense. Geometry comes to his aid first, and teaches him the ultimate laws of bulk and surface; then, by the help of pure arithmetic, he is enabled to express in the language of the intellect the entire sensible world. And this, he feels, is not mere imagination; he is approaching the truth of things. For the universe, after all, is real, and it is the only object of knowledge; only it is not just what our senses perceive. Therefore the more intellectual our account of it becomes, the nearer we are to knowing it as it really is. And the individual soul is a copy of the universal παράδειγμα, the θεῖος νοῦς, though the resemblance is for the present obscured through the adverse power of sin. It must inevitably, some day, return to its first estate, if only it cultivates diligently the activities of reason

that have been planted within it, and models its life upon that of the great Soul of the universe.

Such a view is surely not unworthy of the greatest philosopher of antiquity. The mathematical ideas, with him, did not, as with the Pythagoreans, represent the final analysis of the universe. They were *μεταξύ τι*, an intermediate stage merely, to prepare the soul for the comprehension of the supreme *παράδειγμα*. Let us not set down to him the absurd accretions which were superimposed upon him by his feeble and literal-minded followers, who, engrossed with the thought of ideal numbers to the exclusion of all else, confused their master's doctrine hopelessly with that of his Pythagorean predecessors, thereby casting an unmerited cloud upon the brilliancy of his philosophical reputation. For the Pythagoreans were children, playing with pebbles upon the shore of the vast ocean of knowledge; but Plato had already embarked, with his sails full-set for the open sea.

2 ESSAY VI.

THE ARISTOTELIAN CRITIQUE OF THE IDEAS AND NUMBERS OF PLATO.

ANY account of the Platonic system, particularly in its maturer form, would be imperfect without some reference to the *Metaphysics* of Aristotle; for in them is to be found the only contemporary evidence extant respecting the nature of Plato's doctrine at a time when he himself had ceased to commit his thoughts to writing. To ignore them entirely would, indeed, be a serious error, when one considers that a man's published work is not always the most accurate representation of his mature conclusions, but that his ultimate views are often reserved for the inner circle of friends or pupils, who may, if they will, record them after his death. Objection is frequently made to the testimony of Aristotle in this connexion on the ground of his personal antipathy to the idealist point of view, and the consequent unfairness, not only of his criticism, but of his statement, of Plato's teaching. This, however, is not sufficient reason to deter us from interrogating Aristotle as far as we can, provided we assess his evidence at our own valuation. When all

due allowance is made for the philosophical bias of the witness, there will surely remain a residuum of information which will contribute something to the discovery of the true state of affairs. Therefore, since our aim is to come to some conclusions regarding the Platonic system itself, our endeavour will be to review the information with which Aristotle supplies us, rather than to attempt any estimate of his critical ability, although the character of his criticisms must necessarily reveal itself, to some extent, in the course of our examination; also, for the sake of clearness and convenience, his account of the Platonic system in general should claim our attention before the detailed exposition of the numbers in Books M and N, and in other isolated passages.

Following Aristotle's frequent statement¹, then, we find that the ideal theory, as originally conceived, before it became connected with the nature of numbers, was promulgated as a complementary article to the Heracleitean doctrine of flux. Its supporters were convinced that if there was to be *ἐπιστήμη* or *φρόνησις* of any kind, there must be existences, other than *ρέοντα*, endued with the permanency in which these were lacking; and whereas Socrates, intent on morality and ethics, was content to seek this knowledge in the definitions of general notions merely, which definitions were obtained through *ρέοντα*, Plato and his followers posited certain permanent existences separate from *ρέοντα* (*χωριστά*), which they termed ideas, and of which, as distinguished from *ρέοντα*, the definition was given. The consequence was that they supposed ideas to exist

¹ *Met. A.* 6. 987^a 29 seq.; *Met. M.* 4. 1078^b 9; 9. 1086^a 35.

of every general predicate, after the fashion of a man who, in making a calculation, believes it easier to count a larger number than a smaller one; and the relation which obtained between these ideas and *ρέοντα* they termed *μέθεξις*¹. These, of course, are the ideas as described in the *Republic* and *Phaedo*, where they are assumed for the express purpose of clearing up the mystery of predication, and they meet with the same objection (that of the *τρίτος ἄνθρωπος*) from Aristotle that Plato himself urges against them in the *Parmenides*. But, apart from that, Aristotle continues, the doctrine is very unsatisfactory, because, in the first place, the arguments used by the Idealists do not carry conviction, and, in the second, their contentions result in our having ideas of things for which we do not recognise ideas. The latter criticism is justified by references to dialogues in which are given the accounts that conflict with the orthodox system. Thus, if one accepts their arguments regarding the sciences, there will be an idea for every science (cf. *Rep.* 476 E); according to their explanation of the *ἐν ἐπὶ πολλῶν*, there will be an idea for all negations (*Rep.* 596 A); also, in virtue of the possibility of *νόησις* concerning things dead, we must accept ideas of *φθαρτά* (*Parm.* 132 B, C). But orthodox Platonists apparently do not have ideas of these things. Moreover, the most accurate expositions postulate ideas of relations², of which we present-day Platonists refuse to admit ideas, and in another case the *τρίτος ἄνθρωπος*³ argument itself is brought against the ideal theory. Another inconsistency is found in the fact that, whereas

¹ *Met.* A. 6. 987^b 9.

² *Phaedo* 74 A.

³ *Parm.* 132 A.

the Platonic teaching makes the ideas responsible for *γένεσις* of any kind, there is *γένεσις* of some things, such as *δακτύλιος* and *οἰκία*¹, of which the Platonists say there are no ideas. The Plato whom Aristotle knew apparently claimed ideas of natural objects only, such as *πῦρ*, *σάρξ*, *κεφαλή* (*διὸ δὴ οὐ κακῶς ὁ Πλάτων ἔφη*² *ὅτι εἶδη ἐστὶν ὅποσα φύσει, εἴπερ ἔστιν εἶδη...οἶον πῦρ, σάρξ, κεφαλή*), and these ideas were pre-eminently of a numerical nature, composed of the same *στοιχείαι*³ as visible things, viz., the *ἐν* and the *ἀόριστος δυνάς*, or, *τὸ μέγα καὶ τὸ μικρόν*. Hence the absurdity of those accounts which posit ideas of a multitude of things, for, according to these, number, and not the dyad, is first in importance, and the darling theory of the Platonists is overthrown.

Such, in brief, is the substance of the rambling sketch given by Aristotle, and the writer of Books M and N, of the Platonic system in general. Disjointed as it is, however, it furnishes us with several conclusions regarding Aristotle's relation to the Platonic teaching. In the first place, he certainly was not aware of any single harmonious theory in which all the statements in the dialogues, written at different periods in Plato's career, were to be reconciled. On the contrary, the dialogues furnish him with constant occasion for discontent; they contradict one another, and militate for the most part against the received Platonism of the day. Aristotle, therefore, did not hold, with certain modern critics, that the ideal theory was a single conception that remained essentially the same throughout.

¹ *Met. M. 5.* 1080^a 5.

² *Met. A. 3.* 1070^a 18.

³ *Met. A. 6.* 988^a 11.

Secondly, he speaks as one who has read the dialogues for himself, as a self-imposed task, without any illuminating aid from the one who wrote them. They are a problem which he does not seem able to solve. Clearly, then, Aristotle could not at any time have had the advantage of hearing Plato himself lecture on the subject of the dialogues; he could not have known the ideal theory at first hand during its various developments. By the time he came to the Academy the theory must have suffered material alteration, and apparently no great pains were taken to make the later phase consonant with the former. All Plato's strictly philosophical dialogues were probably already written, and his work lay chiefly in discoursing personally to his pupils on the subject of the ideas as *ἀριθμοί*—so at least one gathers from the numerous references¹ to the *ἄγραφα δόγματα* and *ἄγραφοι συννοσῖαι* made by Aristotle and later writers. At any rate, it is the *ἀριθμοὶ* that loom largest on Aristotle's horizon; the Platonists of his day devoted themselves to them alone, and schism even arose in their ranks on account of their conflicting views regarding them. It is quite natural, therefore, that Aristotle, being steeped in the contemporary views of the school, should display considerable ignorance regarding the evolution of Plato's thought during the interval between the *Phaedo* and the *Timaeus*, and should fail to realise the value of that deliberative and corrective process which we have examined in previous essays. That the ideal theory was not in the beginning identical with its latest phase, he assures us; but of the intervening stages he knows

¹ See *Ar. Phys. Δ. 2.* 209^b 15; *Procl. in Tim.* p. 205.

nothing. But, although we may be disposed to regard him as a dubious authority on the ideal theory at large, we cannot rob him of his importance as a contemporary student of Platonism, when we are examining the latest stage of that theory.

This so-called number-theory, as described by Aristotle, is so full of difficulty, and the dissensions among its supporters are of so intricate a nature, that a complete examination of the evidence is necessary before one can hope to disentangle the views of Plato from those of his successors; and for this purpose it will be wiser to postpone the consideration of the condensed and confused statements of Book A till we have weighed the more detailed accounts of Books M and N. The author of M and N, writing perhaps more as a Platonist than as Plato's contemporary, describes at great length the conflicting tenets of the Platonists of his day. There were, apparently, at least three different sections¹ among the Platonists of that time, one school postulating the existence of two kinds of numbers, the ideal and the mathematical, which were widely different, although alike *χωριστά*, another affirming that *μαθηματικά* and *ιδέαι* are one nature, and that the *ιδέαι* find expression in mathematical terms, and yet a third, who, according to M. 1086^a 2 and N. 1090^a 17, discarded ideas altogether, and sought refuge in *μαθηματικά* simply, declaring, like the Pythagoreans, that things are really numbers.

The first of these theories is a complicated one², for these Platonists believe that the ideal, as opposed to the

¹ See M. 1. 1076^a 16 ff.; M. 8. 1083^a 21 ff.; M. 9. 1086^a 2 ff.; N. 3. 1090^b 16 ff.

² See M. 6. 1080^a 15 ff.

mathematical, numbers, differ one from the other in quality, and are *ἀσύμβλητοι*, i.e., no mathematical operations, either of addition or multiplication, can take place in regard to them. Whereas mathematical numbers are formed by the addition of a plurality of units, all of equal value, the units of ideal numbers are in each case distinct, and cannot enter into combination with those of other ideal numbers. This at least seems to Aristotle the most plausible explanation of the word *ἀσύμβλητος*, though he acknowledges that it may be construed to mean that even the monads of each ideal number itself, if it has any, are not to be added to one another, in which case, of course, the ideas of number will not have the properties of number at all. It is hard to believe, as Aristotle justly points out, that there can exist a number which is not to be formed by the addition or multiplication of units; and, on the other view of *ἀσύμβλητος*, it would seem necessary to make, not only the monads, but the triads, pentads, and all the other constituents of the numbers, to be *ἀσύμβλητοι* as well—a truly complicated task (M. 7. 1082^a 1 seq.). The first doctrine, then, is characterised by ideas of number, which are ranked in a qualitative order (τὸν μὲν ἔχοντα τὸ πρότερον καὶ ὕστερον τὰς ιδέας, M. 1080^b 12), together with mathematical number, apart from the ideas and *αἰσθητά*. These ideas are generally styled *πρώτοι ἀριθμοί*¹, in contradistinction to the numbers of the second school, and are not made to consist, like the ideas of the second school, of the *ἐν* and the indefinite dyad (see N. 3. 1090^b 34: cf. M. 8. 1083^a 32). Mathematical number, more-

¹ See M. 7. 1081^a 4, 21.

over, was regarded by them as *μεταξὺ τοῦ εἰδητικοῦ καὶ τοῦ αἰσθητοῦ*, holding the same position as the *μαθηματικά* of the *Republic*, except that it is now considered to be something between ideal and material *number* exclusively. The old multitude of ideas, representing everything which can be predicated of anything, have dropped into the background, and the ideal numbers are the only ideas, and, in virtue of being ideal numbers, are also the ideas of material things. Such, at least, seems to be the necessary inference from the discussion in M. 8. 1084^{ab}, where the *αὐτοὶ ἀριθμοί*, or ideal, as distinguished from ordinary, numbers, are certainly referred to (1084^a 19, 23), and it is implied that each of the *αὐτοὶ ἀριθμοί* stands for the idea of an animal or the like. There it is also hinted that the ideal series ends with the *δεκάς*, but this is not advanced as a compulsory part of the creed.

Opposed to the Platonists, who posit the two classes of numbers, is the school (least commendable of all, says Aristotle¹) who say that the *ἐν* is the *ἀρχή* and *στοιχείον* of all things, and that by its combination with the *δυνάς ἀόριστος*² number is produced. These apparently agree with the former school in making numbers *χωριστά*, but their numbers are not, like the ideal numbers of the first school, *ἀσύμβλητοι*. They saw the folly of having two distinct sets of number, and their contention seems to have been³ that the ideas took the form of numbers, or were expressible in numbers, for they refused to agree with the more Pythagorising section that numbers are in themselves *οὐσία*⁴. They seemed to justify their position by their speculative analysis,

¹ M. 8. 1083^b 2.² M. 6. 1080^b 6.³ M. 9. 1086^a 7.⁴ M. 9. 1086^a 2; N. 3. 1090^b 17.

not only of number, but of all *μαθηματικά*. After generating number out of the *ἐν* and the *ἀόριστος* *δυσάς*, they proceeded to generate *μέγεθος* out of number and *ὔλη*, or *χώρα*¹, in virtue of their resolution of the solid into 4, the surface into 3, the line into 2, and so on. They are also represented² as in some instances generating the various aspects of *μέγεθος* out of varieties of the *ἀόριστος* *δυσάς*, or *τὸ μέγα καὶ τὸ μικρόν*, which is the ultimate basis of number and all things.

The third section, who, fearful of the *δυσχέρεια*³ that beset the ideas in general, took refuge in *μαθηματικά* alone, seem to have been infected with the taint of Pythagoreanism, though apparently they did not go so far as to make numbers a material cause, as Aristotle would put it (M. 1. 1076^a 35). They did not indulge, like their contemporaries, in the speculative analysis of number into the *ἐν* and the *ἀόριστος* *δυσάς*; but they are represented instead as evolving all number from the addition or multiplication of *ἑν*⁴.

Now it is at once obvious that of the three theories the first is by far the most complicated, inasmuch as it is at pains to draw fine distinctions between the *εἰδητικοὶ* and the *μαθηματικοὶ ἀριθμοί*, and applies different phraseology to the two kinds. The *εἰδητικοὶ ἀριθμοί* are *πρῶτοι ἀριθμοί*, and are incapable of mathematical operation of any sort, whereas the *μαθηματικά* are *μεταξύ*, and are subject to mathematical calculation. The upholders of this view, moreover, did not seem to endorse the theory of number as being compounded of the *ἐν* and the *ἀόριστος* *δυσάς*; they seem, in fact, to have left the

¹ N. 3. 1090^b 21.² M. 9. 1085^a 9.³ M. 9. 1086^a 3.⁴ M. 8. 1083^a 21.

details of their theory unexplained, not even trying to give an account of the *μαθηματικοὶ ἀριθμοί*¹. We may, however, draw several inferences regarding this section of the Platonic school. The fact that *μαθηματικά*, on this view of the numbers, are almost always termed *μεταξύ*, has already led Prof. Cook Wilson² to infer that the ideas of number referred to here are identical with the earlier doctrine of the *Republic*. While allowing that the discussion of *μαθηματικά* in Book B, and perhaps a few other passages, may refer to the theory of the *Republic* alone, I believe that the details concerning the *ἀσύμβλητοι ἀριθμοί* in M and N cannot but belong to the late theory of numbers, which, in the hands of one section of Platonism, was contaminated with the mathematical teaching of the *Republic*³. There, it will be remembered, there is an eternal and immutable idea of every mathematical notion, besides the abstract conception of which the scientific definition treats. This later school of Platonists, as far as we can judge, took over this portion of the educational scheme of the *Republic*, and, ignoring for the most part the geometrical, astronomical, and other *μεταξύ* (A. 9. 992^b 13), used it to explain the difference between ideal and mathematical number. The theory of the *Republic*, however, was assuredly pressed into the service of the later number-theory, in order, no doubt, to afford a plausible justification for having idea-numbers at all⁴. The *ἀσύμβλητοι ἀριθμοί*, since each represented a unique entity, were *ἓν*, and not *πολλά*, and were, therefore, not subject to the objection

¹ N. 3. 1090^b 34.

² See Art. by Prof. Cook Wilson, *Class. Rev.* vol. xviii. p. 247.

³ *Rep.* 525 A ff.

⁴ See M. 7. 1081^a 6 ff.

raised by Aristotle, that if *any* number could be an idea, the ideas for each object would be multitudinous. It is at any rate clear that these Platonists thought their ideal numbers to be the ideas of things. The writer of Book M¹, referring at c. 8 to the *πρῶτοι ἀριθμοί*, which he shows to be subject to the same absurdities as ordinary *ἀριθμοί*, gives as hypothetical instances of the numbers that stood for ideas of things ἡ τετράς αὐτή and ἡ δυὰς αὐτή, thereby showing clearly that the supporters of the *πρῶτοι ἀριθμοί* used them to express the reality of visible things. In common with the rest of the school, they held that number was the highest expression of reality, but it was not mathematical, but ideal, number that was so distinguished.

To this section of the school, undoubtedly, belongs that curious article of belief which Aristotle attributes to the Platonists in the sixth chapter of the first book of his *Ethics*². The later Platonists, he says, did not admit the existence of an idea to correspond to a group of things whose members were in the relation of *πρότερον καὶ ὕστερον* to one another (i.e., they did not accept the doctrine of the *Republic in toto*, and allow an idea of every predicate), and, consequently, did not recognise a single idea of number to correspond to the group of ideal numbers, which were in the relation of *πρότερον καὶ ὕστερον* to one another. These Platonists, in short, utilised a part only of the machinery of the ideal theory of the *Republic*. The assumption of an idea for every predicate was for them unnecessary, since the logic of predication, thanks to Plato's dialectical zeal as exemplified

¹ M. 8. 1084^a 23 seq.

² *Eth. N.* I. vi. 1096^a 17.

in the *Parmenides*, the *Sophist*, and elsewhere, was not to them a mystery, such as it had been to the Eleatic Zeno and his contemporaries. They retained apparently ideas of numbers only, and these ideas had the pre-eminent virtue of representing the reality of all existing things; and, although they constituted an ideal series, they were to be exempt from the original rule that every group of particulars has an idea corresponding to it.

The second class of Platonists did not feel compelled to have recourse to these shifts for maintaining the doctrine of the ideas as numbers. There did not seem to them to be any absurdity in supposing that the ideas should be represented as ordinary ἀριθμοί, and that the highest expression of the reality of the universe was to be found in mathematical formulae. They laid great stress on the derivation of number from the ἐν and the ἀόριστος δυάς, which were the στοιχεία, not merely of number, but of all existing things. In fact, it was in virtue of thus containing in their essence the elements to which all existing things must ultimately be reduced, that numbers were marked out by them as the ideal prototypes of things. Of these two στοιχεία, it is the unit that is the στοιχείον par excellence, since it furnishes οὐσία to the number that is generated, whereas the indefinite dyad acts as the ἕλη or δύναμις. The statements made regarding this latter mysterious conception are somewhat vague, and not always consistent, and it would appear that the Platonists held varying beliefs regarding it. In general, however, it may be said that it is the potentiality of quantity, of excess and defect. Some of the schools

called it *δυοποιός*¹, that which duplicates whatever it operates upon, *τοῦ γὰρ πολλὰ τὰ ὄντα εἶναι αἰτία αὐτῆς ἢ φύσις*²; and Simplicius adds: *καθὸ γὰρ δυνάς ἐστι, πλήθος καὶ ὀλιγότητα ἴσχεν ἐν ἑαυτῇ· καθὸ μὲν τὸ διπλάσιόν ἐστιν, ἐν αὐτῇ πλήθος...καθὸ δὲ ἥμισυ ὀλιγότητα*³. This tenet, however, was, I believe, the result of a misconception regarding the origin of the term *δυνάς*, as will appear later. The ordinary phrase for the *δυνάς*, applied, we are told, in the first instance by Plato, was *τὸ μέγα καὶ τὸ μικρόν*, but some Platonists preferred to call it by the general name *πλήθος*⁴; whereas others chose to employ a variant of the original *μέγα καὶ μικρόν* which seemed to them to be more appropriate to the nature of the *δυνάς*, viz., *τὸ ὑπερέχον καὶ τὸ ὑπερέχόμενον*⁵.

The third, Pythagorising, school need not detain us long. Dropping all compromise, they maintained boldly that things are numbers. To them possibly belonged Xenocrates⁶, who, interpreting p. 35 A of the *Timaeus*, affirmed that the generation of the soul out of the *ἀμέριστος* and the *μεριστή οὐσία* was simply the generation of number out of *ἐν* and *πλήθος*, and that the soul was therefore only a number that moved itself; and if we are to believe the account of *Met. N. 5. 1092^b 8 ff.*, there must have been very little to choose between them and the Pythagoreans.

It is now time to turn to the consideration of the confused statements in Book A, with a view to determining

¹ M. 7. 1082^a 14; M. 8. 1083^b 36.

² M. 8. 1083^a 14.

³ Simp. in Ar. *Phys.* 104 B.

⁴ N. 1. 1087^b 30.

⁵ N. 1. 1087^b 18.

⁶ Ar. *de An.* A. 4. 408^b 32; Plutarch, *περὶ τῆς ἐν Τιμαίῳ ψυχογονίας* c. 2.

how much of this number-doctrine can be legitimately fathered upon Plato, who is there said to have originated it. After various details regarding the ideas as originally described in the *Phaedo* and *Republic*, we are told that¹ Plato regarded the μαθηματικά as being μεταξὺ τῶν πραγμάτων, and apparently at the same time held that, since the εἶδη are the causes of ῥέοντα, their στοιχεῖα must accordingly be the στοιχεῖα of existing things also; and these στοιχεῖα were two, ὥς μὲν οὖν ὕλην τὸ μέγα καὶ τὸ μικρὸν εἶναι ἀρχάς, ὥς δ' οὐσίαν τὸ ἔν. This statement, on the face of it, proves that the writer was not careful to distinguish the different stages of Platonic doctrine. How could a belief in μαθηματικά as μεταξὺ between ideas and sensibles be held in conjunction with the doctrine that ideas are numbers composed of numerical στοιχεῖα? Our investigation of the two leading doctrines described in M and N showed us that the two positions were quite incompatible, inasmuch as the first school made their numbers ἀσύμβλητοι, whereas the latter made no such condition. A further confusion, moreover, is to be found in the phrase τὸ μέγα καὶ τὸ μικρὸν εἶναι ἀρχάς. According to N. 1. 1087^b 14, the view that made τὸ μέγα καὶ τὸ μικρὸν two separate ἀρχαὶ belonged to a very late sect of Plato's followers, and could not with accuracy be ascribed to him at all. The account of Plato's doctrine given here is, therefore, by no means clear or exact. The statement, however, that Plato made the ideas as numbers to consist of the ἔν and the μέγα καὶ μικρὸν is one that demands our attention, for it is borne out by other passages such as *Physics* Γ. 4. 203^a 10, Δ. 2. 209^b 33. But since Aristotle is so

¹ A. 6. 987^b 15.

lacking in precision concerning the divergences of the schools, and fails so often to point out where Plato ends and Platonism begins, the utmost caution must be exercised in attributing to Plato himself any of the number-doctrines mentioned by Aristotle, even when they bear his name. Only when we find confirmation in the dialogues themselves can we with certainty assume that Plato himself was the author of any of these views.

That Plato in the *Timaeus* has given to μαθηματικά an important place in his ideal reconstruction of the universe will not be denied by those who have accepted the results of Essays III and IV. Let us then compare τὸ μέγα καὶ τὸ μικρὸν of Aristotle's critique with the parallel conception in Plato, which was delineated first in the *Philebus* as τὸ μᾶλλον τε καὶ ἥττον, and developed later into the χώρα of the *Timaeus*. Plato began, as we found in Essay II, with a realisation of the vast multitude of antithetical qualities in terms of which the flux of sense is for the most part to be expressed. The typical instances of these were τὸ θερμότερον καὶ ψυχρότερον, τὸ ξηρότερον καὶ ὑγρότερον, and τὸ μείζον καὶ σμικρότερον, the comparative degree marking the infinite variability of the attributes themselves and of the flux which they represented. The mere isolation of these qualities, however, from their environment seemed to imply the existence, κατὰ λόγον, at any rate, of something within which they arose and perished, and consequently we heard of ἡ τοῦ μᾶλλον τε καὶ ἥττον ἔδρα, within which the antithetical qualities found a home, that which made their existence possible. In the *Timaeus* we found the

conception of the *ἔδρα* still further developed; Plato there, in fact, had sketched¹ for us in clear language the abstract notion of space, within which these qualities arise, together with the objects which they compose (*τὸ δὲ ὁποιοιοῦν τι, θερμὸν ἢ λευκὸν ἢ καὶ ὀτιοῦν τῶν ἐναντίων καὶ πάνθ' ὅσα ἐκ τούτων*). Plato also had utilised this conception in order to give an intelligible representation of the ideas of natural objects; within this abstract *χώρα* he caused to appear the ideal counterparts of fire, air, earth and water—geometrical structures composed of triangles combined in various proportions, the highest expression of the eternal laws of Becoming.

Now it is extremely probable that the phrase *ἀόριστος δυνάς*, so much used by Aristotle, arose while the theory of space was taking shape, and was based on the description in the *Philebus*, in which we are presented with the picture of two extremes in ever-varying degrees of approximation to, and divergence from, each other. The writer of *N* practically acknowledges this when he speaks of *ἡ τοῦ ἀνίσου δυνάς τοῦ μεγάλου καὶ μικροῦ*². If the phrase had originated as an arithmetical term simply, i.e., as the equivalent of the duplicating force, it would not have been conjoined invariably with those two antithetical adjectives. Moreover, when Plato's analysis of matter developed still further and was found to consist ultimately in the notion of abstract space, it is quite conceivable that the *χώρα*, the *δύναμις* or *ὕλη* of size and extension, should be popularly described in the school by the *ἀόριστος δυνάς* most appropriate to it,

¹ *Tim.* 50 A.

² *N.* 1. 1087^b 7.

viz., that of τὸ μείζον καὶ σμικρότερον or τὸ μέγα καὶ τὸ μικρόν; for the tendency of the *Timaeus* was to make all these sensible qualities but variations of the fundamental opposition of τὸ μέγα καὶ τὸ μικρόν, as the exposition of 61 E ff. particularly shows. The qualities of hot and cold, hard and soft, and the like, are dependent upon the geometrical structure of the elements which produce them; they are secondary effects¹ of the primary differences of shape in the elementary figures, and consequently τὸ μέγα καὶ τὸ μικρόν is the fundamental opposition of matter. But, after the date of the *Timaeus*, while the Platonic number-theory was rapidly developing in various directions, the phrase τὸ μέγα καὶ τὸ μικρόν undoubtedly came to be used in a somewhat restricted sense, and in a fashion that to the writer of M and N appeared inaccurate. It was applied to the ὕλη of ἀριθμοὶ as such, which to many contemporary Platonists² seemed to be represented better by the words τὸ πολὺ καὶ τὸ ὀλίγον, or τὸ ὑπερέχον καὶ τὸ ὑπερεχόμενον. Some indeed repudiated τὸ μέγα καὶ τὸ μικρόν altogether, and substituted the simpler πλήθος. All, however, agreed in making the ἐν the other στοιχείον, and regarding it as the source of οὐσία in the numbers that were generated.

Now is there any indication that Plato himself was responsible for this extension of the phrase τὸ μέγα καὶ τὸ μικρόν? In c. 6 of Book A, previously referred to, he is not only said to have employed it in this way, but the reasons for his doing so are given in a passage that abounds in reminiscences of the *Timaeus*. "The

¹ Cf. M. 9. 1085^a 10.

² N. 1. 1087^b 16 ff.

second στοιχεῖον," says Aristotle¹, "they made a dyad, because the numbers, with the exception of the πρῶτοι ἀριθμοί (i.e., the ideas of numbers advocated by the first of the Platonic sects), were easily generated out of it, as it were from an ἐκμαγεῖον." "And yet," Aristotle goes on to say, "the Platonic account is not in harmony with facts, for in actual life one εἶδος generates many things out of many substances, not from one ὕλη, as the Platonists say; neither is their simile of the father and the mother consistent with their doctrine." Here we have obviously the argument and the imagery of *Timaeus* 50 A—E reproduced in a condensed form, and transferred from the conception of χώρα, to which they were originally applied, to that of a δύναμις of plurality, out of which, with the aid of the unit, ἀριθμοὶ are evolved. Not only, then, may we suppose the existence of a χώρα, within which all manner of geometrical figures are generated, but even the more select science of number must have as its foundation a conception of an arithmetical ὕλη, an arithmetical ἄπειρον, from which, with the aid of the "atomic" unit, the whole army of numbers is to be created.

This extension of geometrical terms to the science of number is by no means surprising. It was the recognised scientific method of the day. From the first geometry had been called into requisition to exemplify the technical differences of number, as the mathematical demonstration of the *Theaetetus*² clearly indicates. If the square, the oblong and the gnomon³

¹ A. 6. 987^b 33.

² *Theaet.* 147 D seq.

³ Cf. *Ar. Phys.* Γ. 4, 203^a 14.

each represented a mathematical principle which is valid for the science of number, no less than that of surface, why should not the abstract, ideal *χώρα*, within which these figures arise, also have its counterpart in arithmetic? What is it that makes the generation of number possible? The point, which forms the original basis of all superficial and solid figures, is, in arithmetic, the unit, the *στιγμὴ ἄθετος*¹. The *χώρα*, or the *μέγα καὶ μικρόν*, then, of number, is that which provides for the multiplication, the pluralisation of the unit, the vague *δύναμις* of amplification, of quantity, which is best described as *τὸ ὑπερέχον καὶ τὸ ὑπερεχόμενον*².

It is not at all incredible that Plato may have been the author of this development in mathematical science, but it is more difficult to believe that he associated it with his ideal theory of numbers, and said that the mathematical *ἐν* and the *ἀόριστος δυνὰς* of number were the *στοιχεῖα* of the ideas and all existing things, as Aristotle indicates. In Essay IV we had reason to believe that in the *Timaeus* he posited the existence of certain mathematical ideas—the mathematical laws which governed the existence of all perceptible things, and which, for him, represented their truest reality, inasmuch as they were the eternal and intelligible counterparts of the things of flux. But these laws of matter depended for their expression on geometrical, no less than arithmetical, formulae. The science of number, indeed, supplied the proportions which were necessary to the formulation of the law; number was in a manner its *οὐσία*, but the no less essential *ὕλη*

¹ M. 8. 1084^b 26.

² Cf. Ar. *Phys.* Γ. 6. 206^b 27.

took the form of primary geometrical triangles, involving, of course, the *μέγα καὶ μικρόν* of space. And some Platonists seem to have adhered to this view to the end, if we can trust the evidence of M. 9. 1085^a 33, where it is stated that some preferred to think of the ideas as composed of the *στιγμή* and a spatial *ῥή*.

It is just possible, however, that Plato may have analysed the *στοιχεῖα* of his mathematical ideas yet further, and announced that the ultimate elements of all were the numerical unit and the numerical *ἀόριστος δυνάς*. At N. 3. 1090^b 21 the adherents of the second school of Platonism are represented as generating mathematical *μεγέθη* (which are the equivalent of the mathematical ideas of the *Timaeus*) out of *ἀριθμός* and *ῥή*, through their identification of the point with the unit, and so on, and deriving number itself from the *ἐν* and the *ἀόριστος δυνάς* as *ἀρχαί*. Moreover, it is quite conceivable that Plato would have concurred in the view, given at B. 1002^a 4, that the surface is prior to the solid, the line to the surface, and the point and monad to the line. Seeing, therefore, that Plato in all probability *did* regard¹ the fundamental conceptions of geometry as varieties of the corresponding arithmetical notions, by his identification of the point with unity, the line with duality, and so on, it may be that he finally decided that the ultimate bases of the mathematical ideas were the unit and the arithmetical *μέγα καὶ μικρόν*. Some such modification of view is declared by Aristotle in his *Physics* to have taken place. In the fourth book of the *Physics*² we are told that Plato's

¹ See *Rep.* 528 A, B. Cf. *Phys.* Γ. 6. 206^b 27.

² *Phys.* Δ. 2. 209^b 11.

account of ὕλη, or τὸ μεταληπτικόν, in the *Timaeus* was different from that given in the ἄγραφα δόγματα: διὸ καὶ Πλάτων τὴν ὕλην καὶ τὴν χώραν ταῦτό φησιν εἶναι ἐν τῷ Τιμαίῳ· τὸ γὰρ μεταληπτικόν καὶ τὴν χώραν ἐν καὶ ταυτόν, ἄλλον δὲ τρόπον ἐκεῖ τε λέγων τὸ μεταληπτικόν καὶ ἐν τοῖς λεγομένοις ἀγράφοις δόγμασιν. Similar affirmations from other commentators on Plato or Aristotle are too numerous to mention. If these considerations, then, are to be accepted as proof, we may say that Plato's own later views are to be assigned, if to any, to the second of the Platonic schools which we have been considering.

We may then, I think, regard it as certain that Plato, in his latest stage, paid great attention to certain mathematical ideas, or laws, governing material existences, and as highly probable that he proved these mathematical proportions to be capable of being analysed into two ultimate elements, the ἐν and the indefinite dyad. Immediately after his death, however, and possibly before, the Platonists seem to have fastened on the number-theory as a fit medium for all manner of Pythagorean extravagances, which the philosophical Plato could not have entertained for a moment. This they accomplished partly by amalgamating with the number-doctrine certain Pythagorean traditions, such as the attribution of special virtue¹ to the numbers ten or seven, and the derivation of good and evil from the ultimate πέρας and ἄπειρον in number, and partly by interpreting certain passages in Plato's dialogues in too literal a sense. It would seem, in fact, that a regular school for the interpretation of the dialogues started

¹ See N. 6. 1093^a 28; M. 8. 1084^a 12; N. 4. 1091^b 34.

soon after Plato's death. Xenocrates' interpretation of *Timaeus* 35 A has already been touched upon; and the wide-spread view that the *δυσ* was the cause of evil, and the *ἐν* consequently of good, was in all probability based upon passages like *Timaeus* 53 B, where the *ὑποδοχή*, before the introduction of method and measure, is said to have been the reverse of *κάλλιστον* and *ἄριστον*. The combination of the ideas of the *Republic* with the number-theory, as illustrated in the doctrine of the first school of Platonists, is also a case in point. Moreover, the people¹ who fancifully attributed the number one to *νοῦς*, two to *ἐπιστήμη*, three to *δόξα*, and so on, were probably interpreting the *Timaeus* in a fashion of their own. The principle that soul is composed of the same elements as the things upon which it operates, which Plato presumably enunciated in his story of the creation of *ψυχή* out of Same, Other, etc., gave rise to the inference that *αἴσθησις*, like the *αἰσθητόν*, is represented by the number 4, whence, by Pythagorean analogy, the numbers one, two, three, were assigned to the other activities of soul.

Such, then, is the sum of the information to be obtained from Aristotle's critique. In the course of our enquiry we have found confirmation for the belief that Plato's ideal theory changed its character from time to time according as his knowledge, and particularly his logical knowledge, grew, that, although for him the assumption of eternal ideas was always obligatory, he latterly no longer retained them for the explanation of things whose mystery was easily solved by the logic of ordinary intelligence, and that his account of the idea

¹ *De An.* A. 2. 404^b 20.

at the end of his life was materially different from that of the *Phaedo* and the *Republic*. In Essays III and IV we had reason to think that, at the end of his days, he recognised two distinct classes of ideal existences, the first being at once the eternal cause of all Becoming and the ethical ideal of every living soul, the second being a mathematical law governing material bodies, the direct criterion of physical beauty. Of the former Aristotle takes no account; but from his exhaustive treatment of the latter it would appear that the mathematical ideas, being the more tangible, took the fancy of the school, and attracted greater investigation. And our conclusion that these mathematical ideas were restricted to natural objects only, to the exclusion of qualities, relations, *σκευαστά* and such-like, has found abundant confirmation in Aristotle's own words. It has also become clear that the nature of the ideas, as they were conceived successively in such dialogues as the *Sophist*, *Philebus*, and *Timaeus*, was not in the least comprehended by Aristotle, since he expects them to be in every respect identical with those of the *Phaedo* and the *Republic*, and complains when he discovers that they are not. The only phase of the ideal theory on which he can speak with any confidence is the very latest stage, the doctrine of numbers, and even there, as we saw in our examination of A. c. 6, he is not careful to distinguish between Plato's own view, and those which are elsewhere acknowledged to be subsequent accretions.

To follow Aristotle in detail through his criticisms of Plato and the Platonic point of view would be an unprofitable as well as a tedious task, for nearly every

objection is levelled from the author's scientific point of view, and with an idealist would have no weight at all. The scorn which is heaped upon the ideas in general is directed largely against the metaphorical processes of *μέθεξις* and *μίμησις*¹, which Plato used in describing their functions; as Plato himself would have acknowledged these to be mere *μεταφοραὶ ποιητικοί*, the criticism is hardly useful. The ideas as numbers are chiefly criticised because they imply the priority of *ἀριθμός*², which is a *συμβεβηκός*, to the *σύνολον*, which is *οὐσία*. This taunt is, of course, dependent upon Aristotle's classification of categories, in which *οὐσία* precedes *ποσόν*—which is scarcely a fit criterion to use in reviewing a predecessor, whose whole point of view was opposed to such a classification. Another objection consists in the statement that, even if the idea *is* a number³, it must be *ἀριθμὸς τινῶν*, of some material ingredients—which in itself shows how materialistic was Aristotle's point of view, and how utterly he had failed to grasp the subtlety of Plato's speculations in the *Timaeus*. There are a few points, indeed, which might justly be made by any man of science, but the criticism on the whole is so absurdly literal that it scarcely merits serious reading. The attack⁴ on the *δὺς ἀόριστος*, for instance, is based largely on the notion that it is literally a dyad, which we know to be inaccurate. In fact, Aristotle is the last authority to look to for a fair and liberal account of Platonism.

¹ A. 9. 991^a 10, 20; M. 5. 1079^b 25.

² B. 5. 1001^b 26; M. 9. 1085^a 20.

³ A. 9. 991^b 20; N. 5. 1092^b 22.

⁴ M. 7. 1081^b 17; 8. 1084^b 37.

Under these circumstances there was, of course, little likelihood that Plato's system, especially in its latest form, should be handed down to us in the form in which he himself evolved and formulated it. Everything has tended to obscure both the expression and the content of the number-theory, and one may almost agree with Berkeley, and say that "Aristotle and his followers have made a monstrous representation of the Platonic ideas, and some of Plato's own school have said very odd things concerning them¹." The aim of this paper has been to show that, in spite of all these obscurations, one can detect a certain residuum that may fairly be ascribed to Plato himself, and that the number-theory cannot be summed up placidly as an elaborate fiction concocted by Plato's successors for the mere purpose of deceiving posterity.

¹ Berkeley, *Reflexions and Inquiries*, § 338. (Bohn's edition vol. iii. p. 325.)

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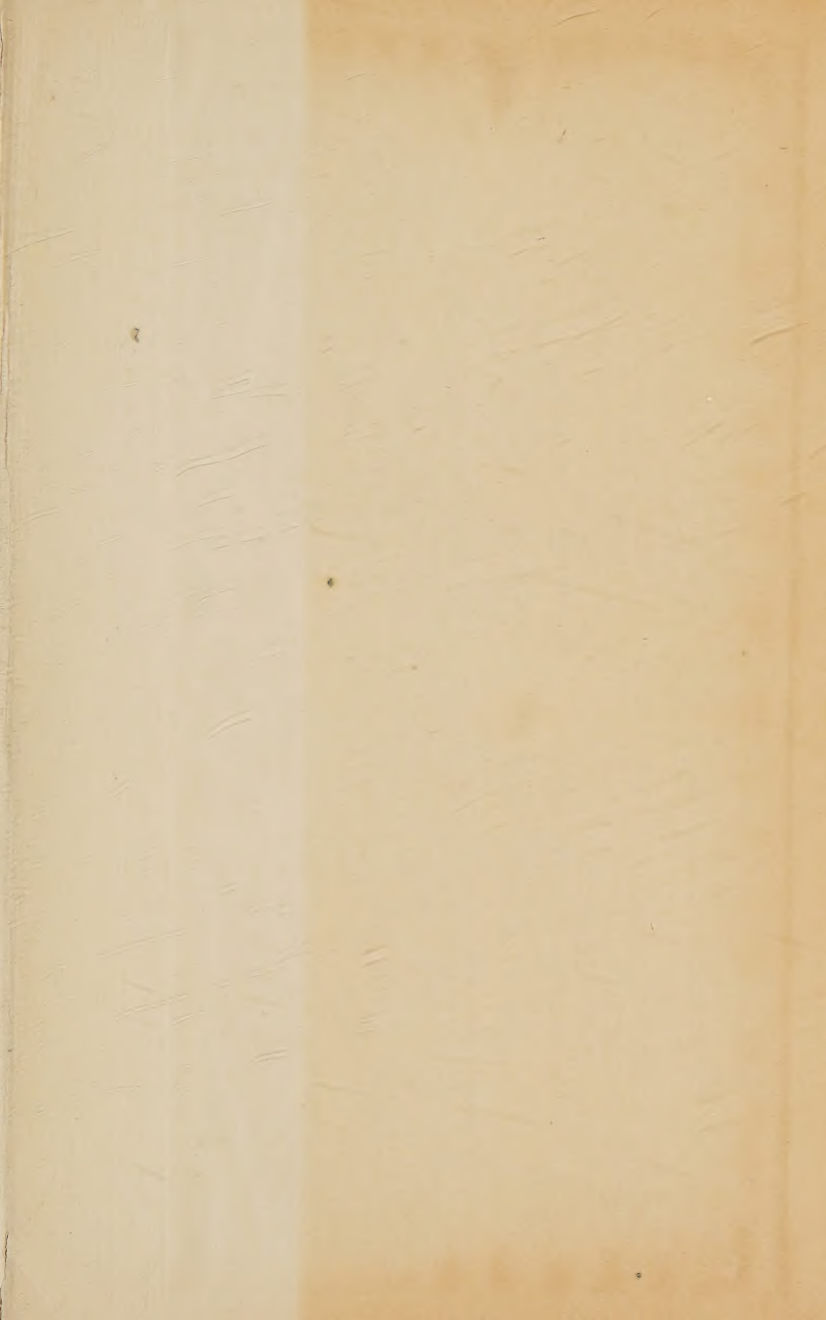
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